APPLICATION SOFTWARE USER'S MANUAL

HICAP 200

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1. INTRODUCTION

Thank you for purchasing our new technology HICAP Series DVR board. We have designed the boards specifically to meet the needs various types of display and recording frames with a high recording speed.

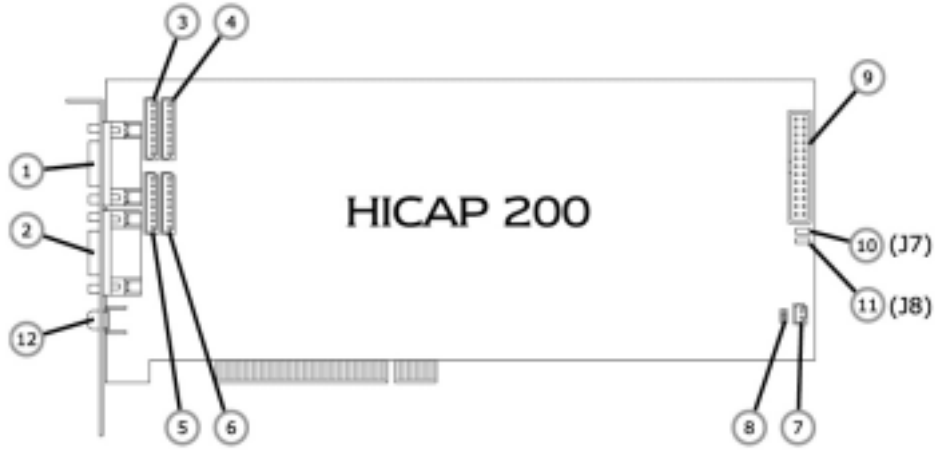
At Protectserve Pacific Ltd.., we have long been a leader in bringing new innovative products to market. Our DVR boards and applications are engineered and manufactured to consistently meet the highest quality standards and are fast becoming the leading DVR boards in USA and many other global DVR markets.

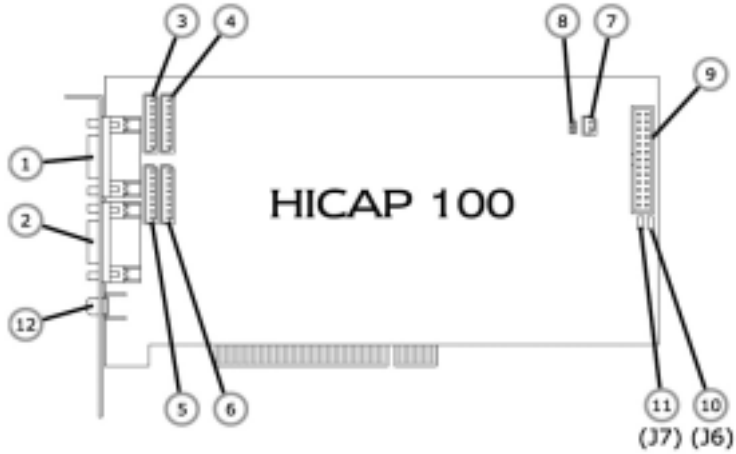
We hope that you or your customers will enjoy using our products. We remain committed to bringing you the newest and best technology. If you have any comments or questions, we can be of assistance in any way, please contact us.

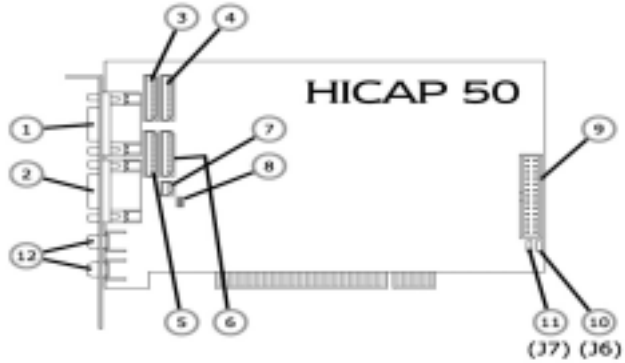
Best Regards,

Protectserve Pacific Ltd.

2. LAYOUT & DESCRIPTION







1) External BNC cable connector: Video Inputs (8ch: Camera 1~8)

2) External BNC cable connector: Video Inputs (8ch: Camera 9~16)

3) Internal Molex cable connector: Video Inputs (4ch: Camera 1~4)

4) Internal Molex cable connector: Video Inputs (4ch: Camera 5~8)

5) Internal Molex cable connector: Video Inputs (4ch: Camera 9~12)

6) Internal Molex cable connector: Video Inputs (4ch: Camera 13~16)

7) Watch-Dog connector: DVR board to the reset pin of motherboard

8) Reset pin connector: the pin of reset button to DVR board

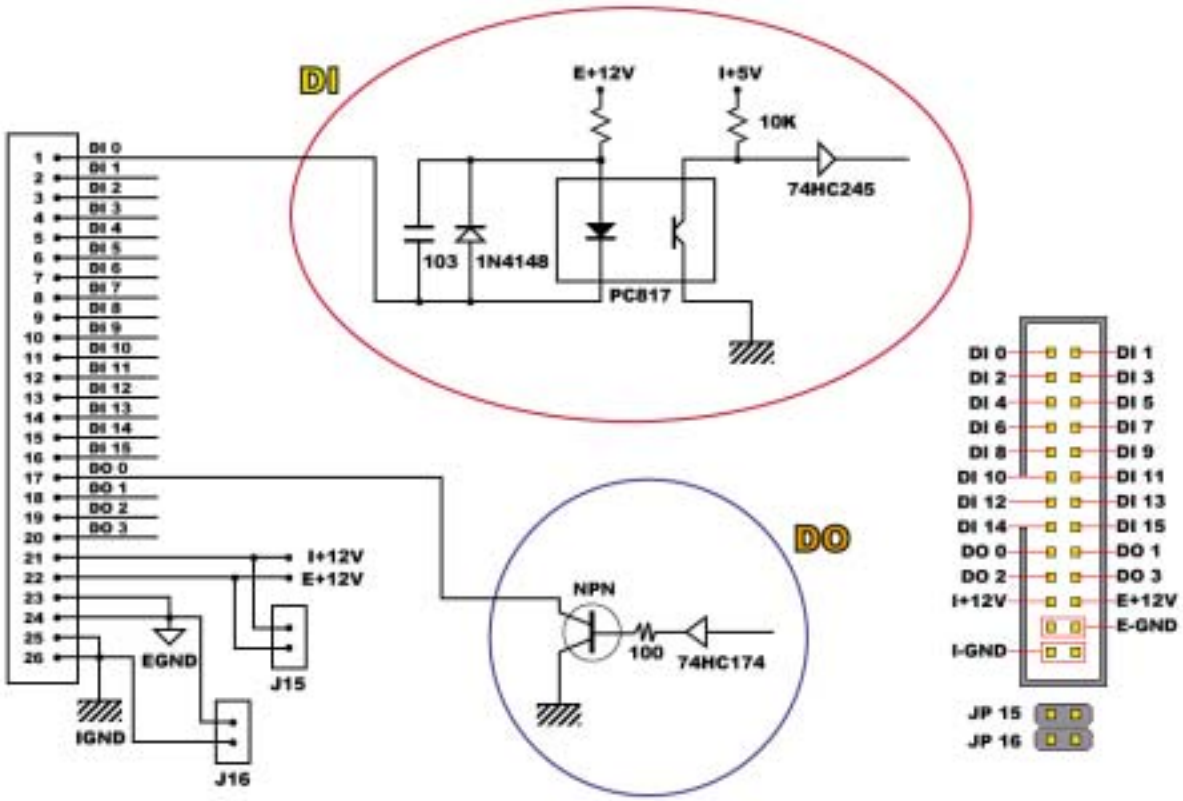
9) DIO connector: From Protectserve DIO Guide or Back-Panel

10) 11) DI Power setting jumpers: Refer to the next page

When removed the serial tag (XX-2XXX-XXXX) on backside, Protectserve has no responsibility for warranty.

* DIO CONNECTOR

Every Protectserve DVR board has a Sensor DIO connector on it. It is designed for 16 Sensor Inputs and 4 Alarm Outputs. Our DVR boards have this DIO circuit drawn as below on PCBs. If you like to design your own DIO guide or panel and use them with our DVR boards, refer to the pin assigns provided below.

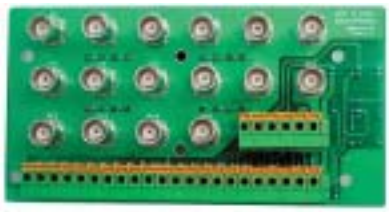


* When connecting with sensor inputs, open JP15 and JP16 unless you want to use a power from our DVR boards.

* You can use our Back-Panel or DIO Guide shown below.

Back-Panel (PC Assemble Type) DIO Guide

(16BNC Inputs + DIO) (DIO only)



* Protectserve '**DIO Guide**' Connections.

DI part		DO part	
1	Sensor Input 1	C	DO 1
2	Sensor Input 2	A	
3	·	B	
4	·	C	DO 2
5	·	A	
6	·	B	
7	·	C	DO 3
8	·	B	
9	·	C	DO 4
10	·	B	
11	·	+12	Common VCC+12
12	·	+12	
13	·	GND	Common GND
14	·	GND	
15	Sensor Input 15	GND	
16	Sensor Input 16	GND	

1. DI connection.

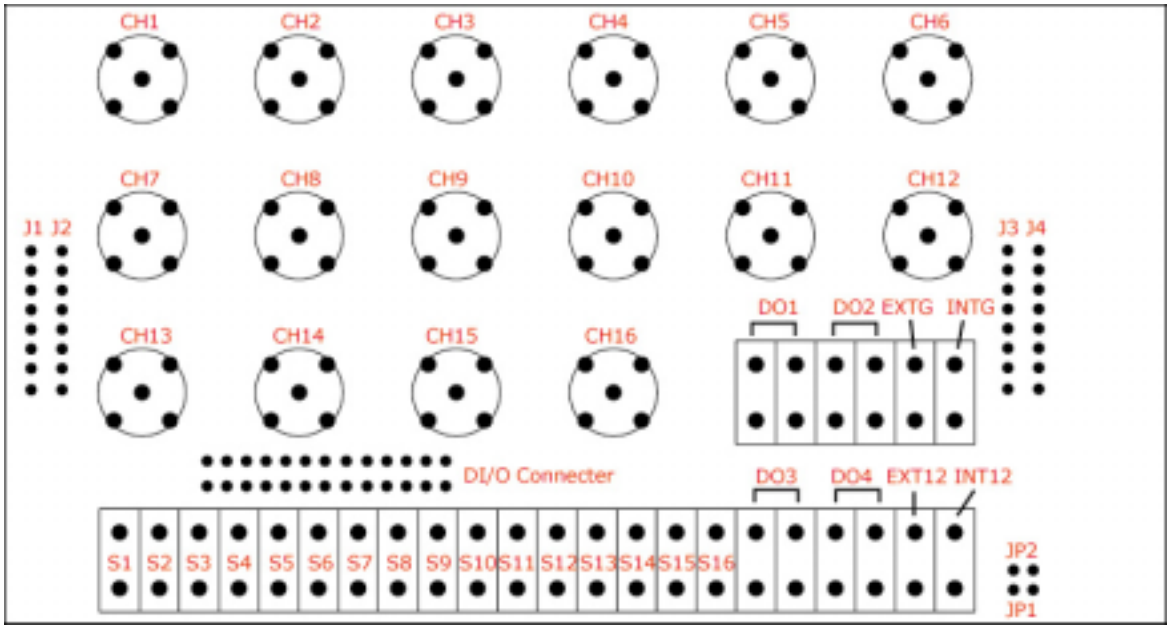
First of all, you need to select how you like to give electronic power to DI sensors. You can use a power from our DVR board but we do not recommend you to use this way because it is safer and more stable when an independent adapter supports power. You need to connect with 'Common VCC' unless you want to use a power from an adapter.

When you use a power from an adapter, you need to connect each DI sensor with our DI connector, and then Ground signals of sensors with Common GND.

2. DO connection.

When you connect DO sensors, you do not need to connect with 'A' but 'B' and 'C'. You cannot use the power of DO sensors from our board.

* Protectserve '**Back Panel<PC Assemble Type>**' Connections



CH1 : Camera Channel 1 CH2 : Camera Channel 2

CH3 : Camera Channel 3 CH4 : Camera Channel 4

CH5 : Camera Channel 5 CH6 : Camera Channel 6

CH7 : Camera Channel 7 CH8 : Camera Channel 8

CH9 : Camera Channel 9 CH10 : Camera Channel 10

CH11 : Camera Channel 11 CH12 : Camera Channel 12

CH13 : Camera Channel 13 CH14 : Camera Channel 14

CH15 : Camera Channel 15 CH16 : Camera Channel 16

J1 : Molex 8pin Connector (Camera 1~4)

J2 : Molex 8pin Connector (Camera 5~8)

J3 : Molex 8pin Connector (Camera 9~12)

J4 : Molex 8pin Connector (Camera 13~16)

S1 ~ S16 : Sensor Inputs (16ea)

DO1 ~ DO4 : Alarm Outputs (4ea)

EXT12/EXTG: External Power +12 / External Ground

INT12/INTG : Internal Power +12 / Internal Ground

JP1 : Close when using Internal Power

JP2 : Close when using Internal Ground

3. HARDWARE SPECIFICATIONS

*** Hardware**

Model Name	HICAP50	HICAP100	HICAP200
Camera Inputs	8,16ea	8,16ea	8,16ea
Default Resolutions	352*240(NTSC) / 352*288(PAL)		
Supported Resolution in SDK	704*576, 704*480, 704*288, 704*240 640*576, 640*480, 640*288, 640*240 352*288, 352*240, 320*288, 320*240 176*144, 176*120, 160*144, 160*120		
Total Display FPS	Ave. 50,100,200 Max. 60,120,240		
Total Recording FPS	Ave. 50,100,200 Max. 60,120,240		
Connector Type	External BNC Cable / Internal Molex Cable		
Sensor In / Alarm Out	Sensor Inputs: 16ea, Alarm Outputs: 4ea		
Overlay Function	Software Overlay		
TV Out Function	1 Channel selectable		
Watch-Dog Function	Yes		
Video Compression	Both Software MJPEG and Wavelet supported		

*** Recommended PC Specification**

- CPU: Intel Pentium III 866 or faster
  (Recommand Intel PentiumⅣ 1.8GHZ at least only for Hicap200)
- Mother Board: Intel Chipset Motherboard
  (Some VIA Chipset motherboards can cause unexpected operations)
- VGA Card: ATI Chipset AGP type Card
  (Other VGA Chipset VGA cards can cause unexpected operations)
- RAM: 128MB or more(Recommand 256MB for HICAP200)
- HDD: 7200RPM or faster
- Supported O/S: Windows98, 98SE, ME, 2000, and XP.

!) AMD CPU will be okay if there is a motherboard without VIA Chipsets. We have noticed that VIA Chipset provides unstable PCI clocking. ATI video chipset is the one that has no hardware problem with our DVR boards.

4. SOFTWARE FUNCTIONS

4-1. High-Speed Monitoring

The Hicap50,Hicap100 and Hicap200 boards let you monitor simultaneously up to all sixteen (16) different camera images on your monitor at 50,100 and 200 fps. It has various display modes more than one (1) full, Quad, and 8&16 Screen modes. Unlike MIS and MID series products that have a built-in overlay function to grab images from cameras, HICAP series products do not have the function and provide Real-live Display Images for display should process by software with Hicap models.

4-2. Storing & Searching

The HICAP Series DVR boards eliminate the need for a video recorder and tapes. You can record outstanding digital video images on your hard drive. The total recording speed (HICAP50: 50fps, HICAP100: 100fps, HICAP200: 200fps) is divided by the number of cameras that are supposed to record in our Application software. Since display and recording fps are same, what you monitor is what you record.

Then, you can easily and quickly search for and playback these video clips directly from your hard drive using our Application software.

4-3. Image-box & Backup

There is a basket saving system in our Application software. It does not save video data on anywhere of your hard drive but in only image-boxes you need to create. As a result, you can manage each video data efficiently and the DVR system does not spend much time for sorting data.

With this image-box system, you can easily select any target image-box or whole image-boxes and back them up on any other physical hard drive by our Backup Application software. With our Viewer Application software, you can also playback the back up data anytime and anywhere with a computer.

4-4. Remote Software

Basically, you can do three things such as monitoring videos and control PTZ cameras from a remote site(s), saving monitored videos and playback in a remote site(s), and searching recorded videos in the main DVR with our Remote Application software we provide. You do not have to have another DVR system to make these things available but just need our Remote Application software that comes together with the main Application software.

4-5. Software MJPEG and Wavelet Codec

As you may know, HICAP DVR boards do not compress videos on PCBs. So, before saving video data on your hard drive, it is required to use a software video compression codec to change formats and save data on your digital hard drives.

There are many software codec nowadays but we provide two major software codec with a high capturing speed. Because we provide both MJPEG and Wavelet Application software for HICAP series DVR boards, you can test both programs and install your favorite one.

If you concern on Video Quality, we recommend you to install the MJPEG Application. If you more concern on File Size than Video Quality, you can install the Wavelet Application.

*Estimated Recording times per HDD.

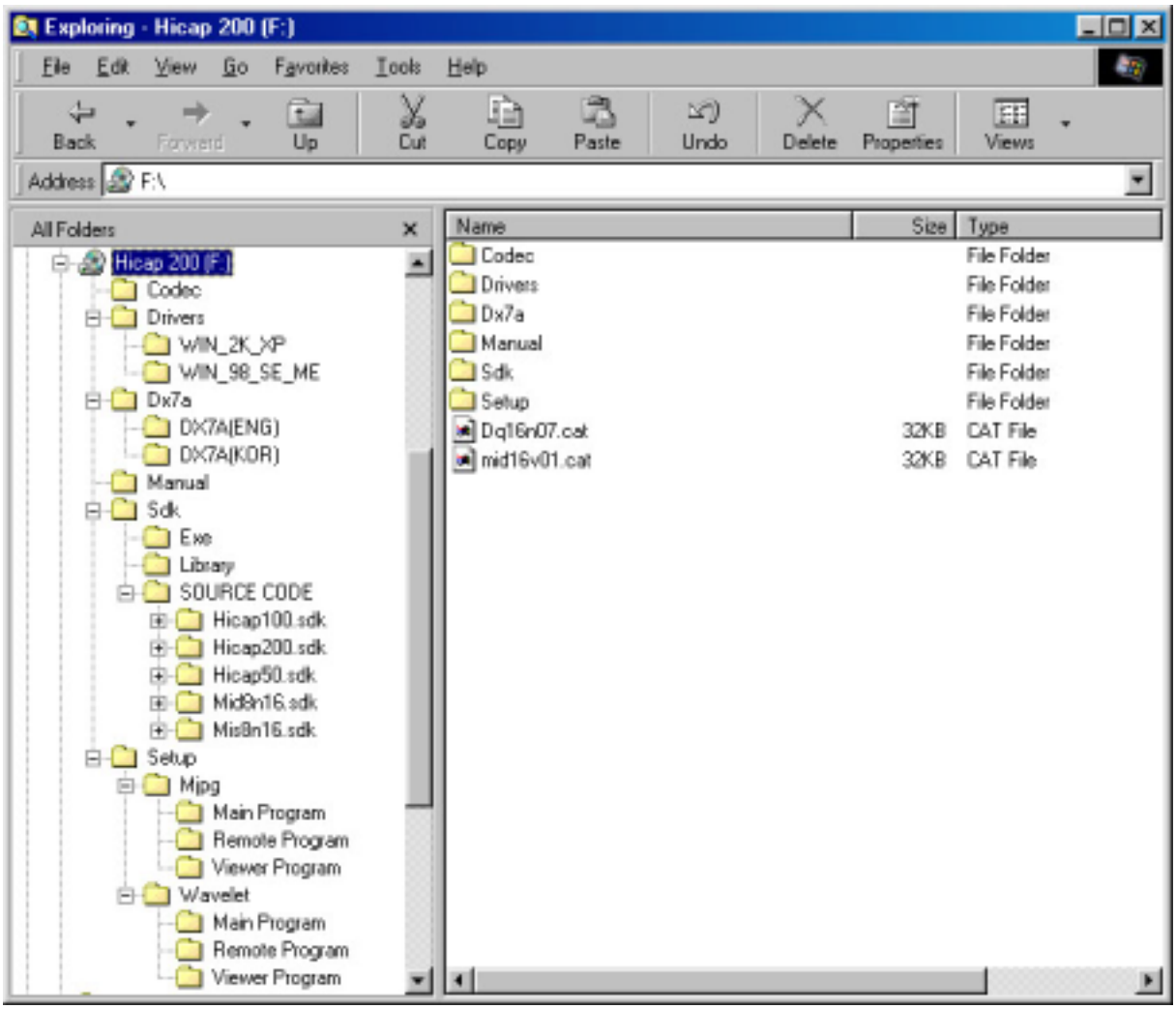
Model Name	HICAP50		HICAP100		HICAP200	
Codec	MJPEG	Wavelet	MJPEG	Wavelet	MJPEG	Wavelet
10GB	4”30’	9hours	2”15’	4”30’	1”10’	2”15’
20GB	9hours	18hours	4”30’	9hours	2”15’	4”30’
30GB	13”30’	27hours	6”45’	13”30’	3”25	6”45’
40GB	18hours	36hours	9hours	18hours	4”30’	9hours
50GB	22”30’	45hours	11”15’	22”30’	5”40’	11”15’
60GB	27hours	54hours	13”30’	27hours	6”45’	13”30’
70GB	31”30’	63hours	15”45’	31”30’	7”40	15”45’
80GB	36hours	72hours	18hours	36hours	9hours	18hours
90GB	40”30’	81hours	20”15’	40”30’	10”10	20”15’
100GB	45hours	90hours	22”30’	45hours	11”15’	22”30’

!) Condition

- Full recording speed continuously (No Motion Detection)
  MID8CH: 3.5fps per channel, MID16CH: 1.5fps per channel
  MIS8CH: 15fps per channel, MIS16CH: 7.5fps per channel
- Video Quality ratio at 60% for MJPEG and 60% for Wavelet. It differs greatly per Video Quality ratio (Video Compression ratio).
- The above data is just estimated and not an exact result. It differs with
  Video Compression ratio, Camera Video quality (less noisy), Moving objects ratio, etc.

5. CD DIRECTORY STRUCTURE

On your CD provided, you will find this directory structure as below.



- Codec: Morgan Multimedia Motion-JPEG Software Codec. **Using this codec for other purposes without Protectserve DVR Board will be your responsibility.**

- Drivers: PNP INF Drivers for Protectserve DVR boards.

- Dx7a: DirectX VER. 7.0 installation file. Our Application software needs this program installed on your system to run.

- Manual: Unified Driver's SDK and Target Board's Application User's manuals.

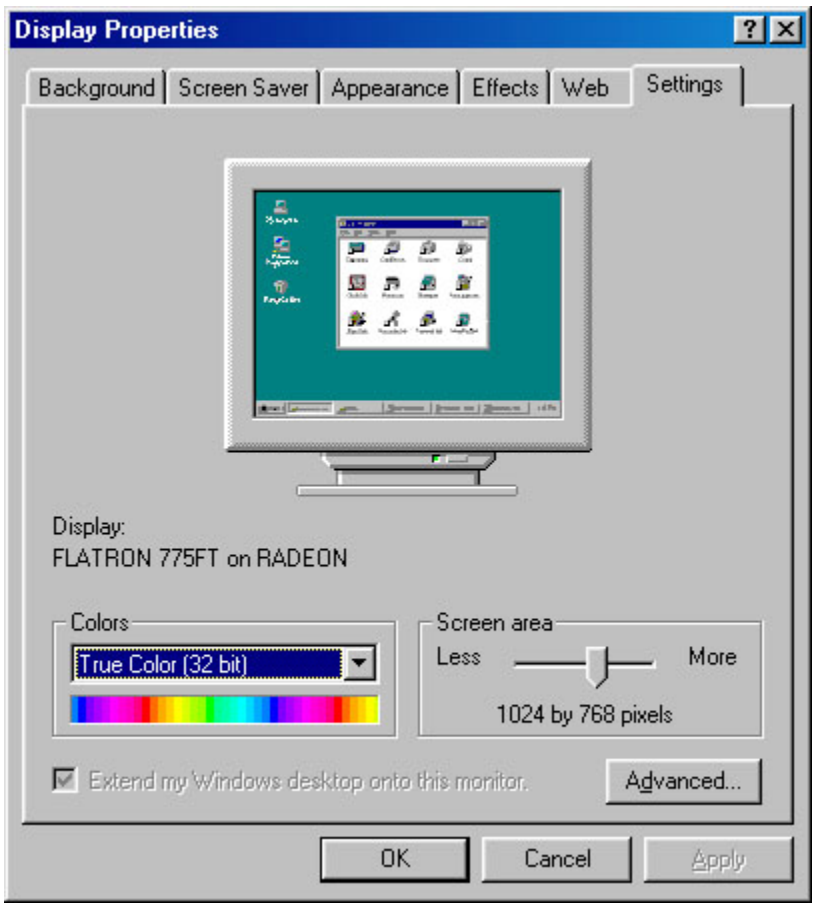
- Sdk: Software Developer's Kit for Protectserve DVR boards. We provide DLLs and a sample program written in Visual C++. We also provide source codes of our sample programs for every model we carry.

- Setup: We support both MJPEG and Wavelet Application software for your target model. Note that you need to completely delete any application software before you install the other codec software on your system. If not, it will not properly work.

6. GETTING STARTED

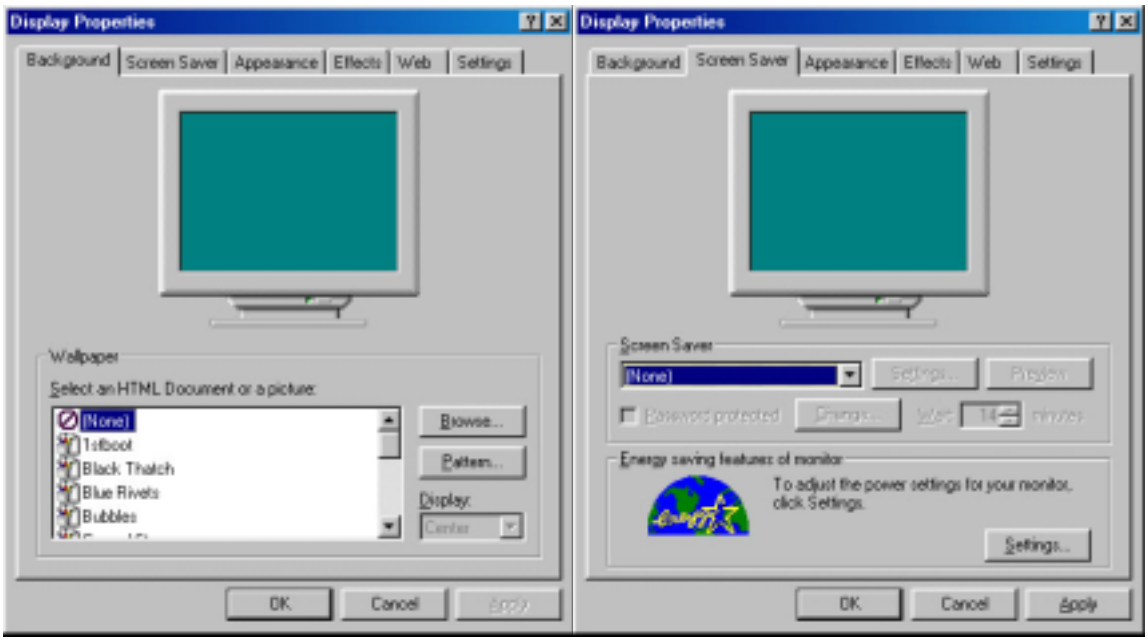
6-1. Monitor Resolution

All of our Application software is designed on Monitor Resolution at 1024 by 768 pixels. If your monitor does not support this resolution or is not set as it requires, our Application will not properly work on your system. Set your monitor as follows.



6-2. Power Management & Display properties

If you select any of such the options above, our Application will conflict with the options selected. So, check out your system if there is any option selected and working as it sets.

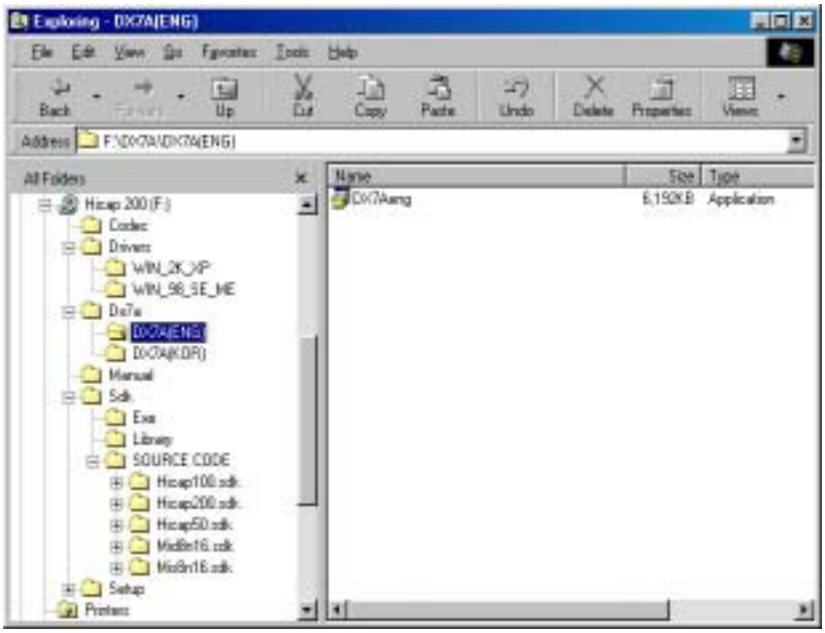


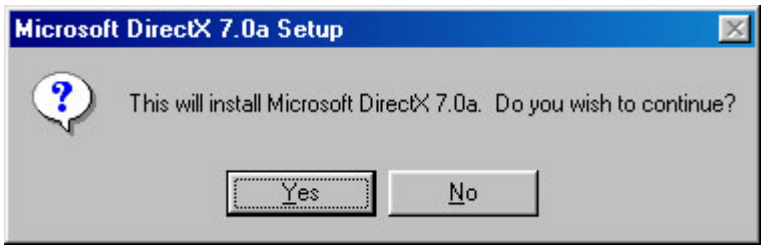
6-3. DirectX 7.0 or newer version installed

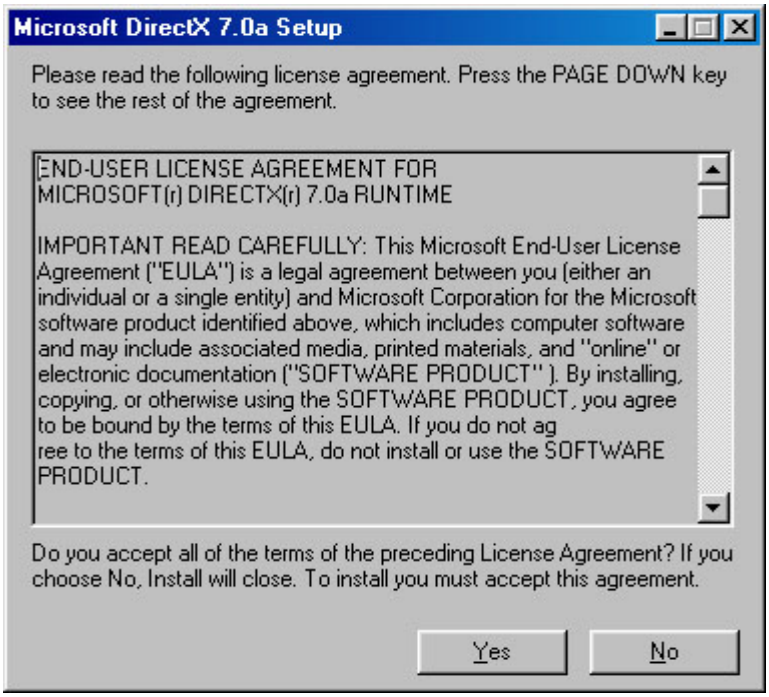
All of our Application software is required your system DirectX7.0 software installed. If you have a system under Windows 2000 or XP, you do not have to take care of this software because they already includes updated DirectX version.

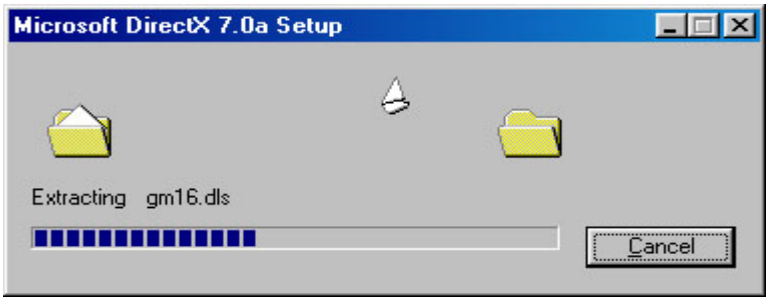
So, if you are planning to install our Application software under Windows 98, 98SE, and ME, check your system if DirectX is already installed or not. If you are not sure of it, you can just install DirectX Ver. 7.0 on your CD we provided with the board together.

You can easily run the program and it will automatically install DirectX on your system.




Microsoft DirectX 7.0a Setup
This will install Microsoft DirectX 7.0a. Do you wish to continue?
Yes
No


Microsoft DirectX 7.0a Setup
Please read the following license agreement. Press the PAGE DOWN key to see the rest of the agreement.
END-USER LICENSE AGREEMENT FOR
MICROSOFT(r) DIRECTX(r) 7.0a RUNTIME
IMPORTANT READ CAREFULLY: This Microsoft End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and Microsoft Corporation for the Microsoft software product identified above, which includes computer software and may include associated media, printed materials, and "online" or electronic documentation ("SOFTWARE PRODUCT"). By installing, copying, or otherwise using the SOFTWARE PRODUCT, you agree to be bound by the terms of this EULA. If you do not ag
ree to the terms of this EULA, do not install or use the SOFTWARE PRODUCT.
Do you accept all of the terms of the preceding License Agreement? If you choose No, Install will close. To install you must accept this agreement.
Yes
No


Microsoft DirectX 7.0a Setup
Extracting gm16.dls
Cancel

7. DRIVER INSTALLATION

Check your components if you have one of each Reset cable and Fan Guide(only for Hicap200) for HICAP series board. Also, we provide two external BNC cables for 16CH DVR boards.

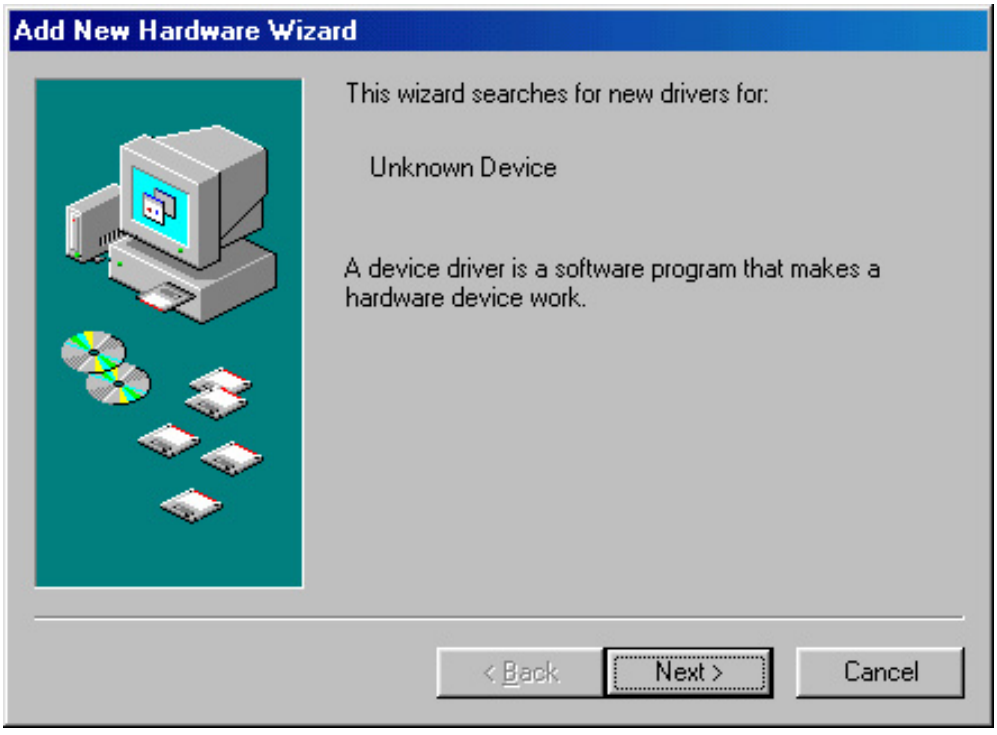
Make sure to install the fan guide next to HICAP200 board as well because it gets rid of heat from the board while it runs.

If you want the Watchdog function, you need to connect the Reset cable between your motherboard and our DVR board. In this case, you need to take the actual reset cable out between your reset button and the motherboard. Then, you can connect the cable with our DVR board so that you still use the reset button of your computer case. Refer to **Page 4** where to connect this cable with HICAP series board.

7-1. For Windows 98, 98SE, and ME

With computer turned off, insert HICAP series board in any vacant PCI slot.

Power on your computer and start Windows 98 as usual


Add New Hardware Wizard
This wizard searches for new drivers for:
Unknown Device
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

Windows 98 will automatically find HICAP series DVR board as a new hardware device. And your system will detect HICAP series as a PCI Multimedia Device as shown below. Click NEXT to continue

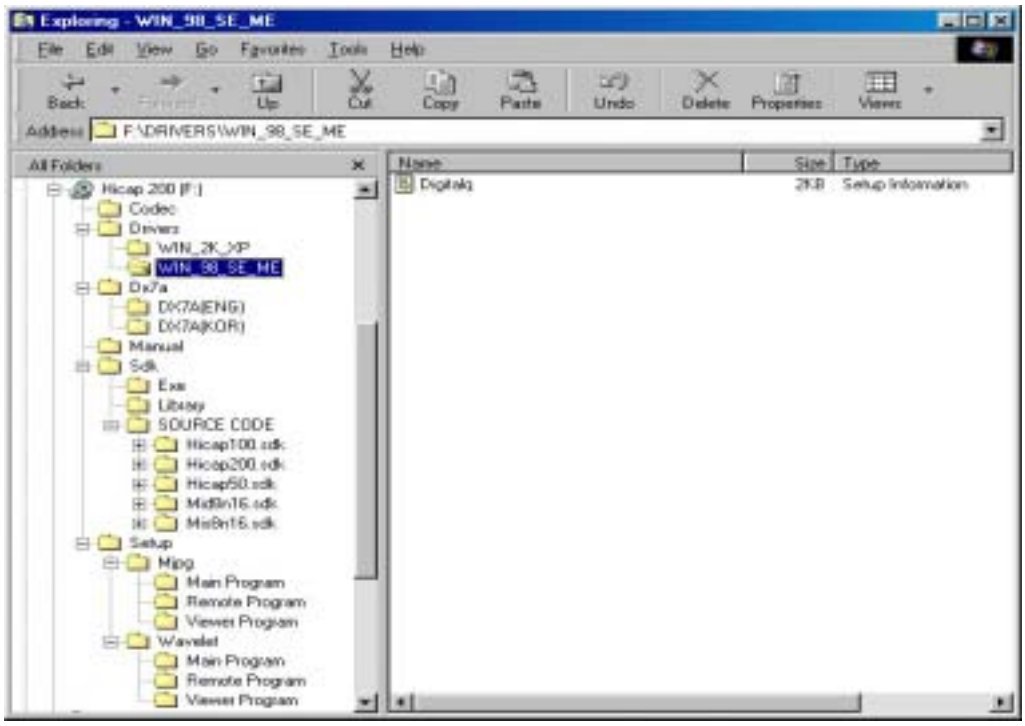
Load HICAP CD (provided) into CD-ROM and Click NEXT to search the driver for HICAP series DVR board.

Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

You need to browse and find our drivers on the CD

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
A:\
Browse...
< Back
Next >
Cancel

The driver for HICAP series is in the directory ‘WIN_98_SE_ME’



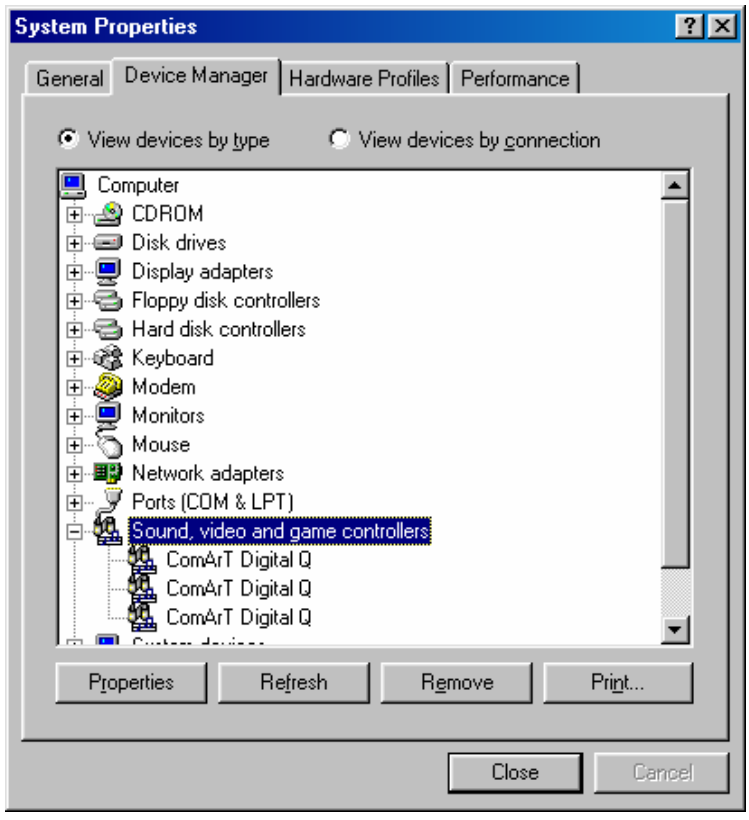
Under Windows 98, 98SE, and ME, all of Protectserve DVR boards are using the same driver called ‘ComArt’. We will not explain how to install HICAP50&HICAP100 Drivers and Application software separately, because it has the same installation procedure.

Add New Hardware Wizard
Windows driver file search for the device:
ComArT Digital Q
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
F:\W98DRV\DIGITALQ.INF
< Back
Next >
Cancel

It will display ‘Digitalq’ in sound, video and game controllers of your system. Click ‘Finish’.

System Settings Change
To finish setting up your new hardware, you must restart your computer.
Do you want to restart your computer now?
Yes
No

Once you restart your system, it will automatically try to install some more drivers as it needs. You need to let them install then.



7-2. For Windows 2000 and XP

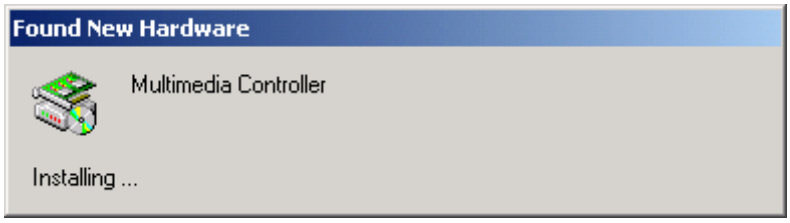
With ComArT Unified Driver, every Protectserve DVR board except MIG4ch shares it. It has the same installation process but your system will detect your target model and install some needed drivers for the target model automatically.

This is an installation example of Hicap200 that needs to install drivers most than other models. So, follow the process of Hicap200 installation below and it will automatically install only necessary drivers for HICAP50&HICAP100 DVR board.

With computer turned off, insert Protectserve Board in any vacant PCI slot

Power on your computer and start Windows 2000 as usual

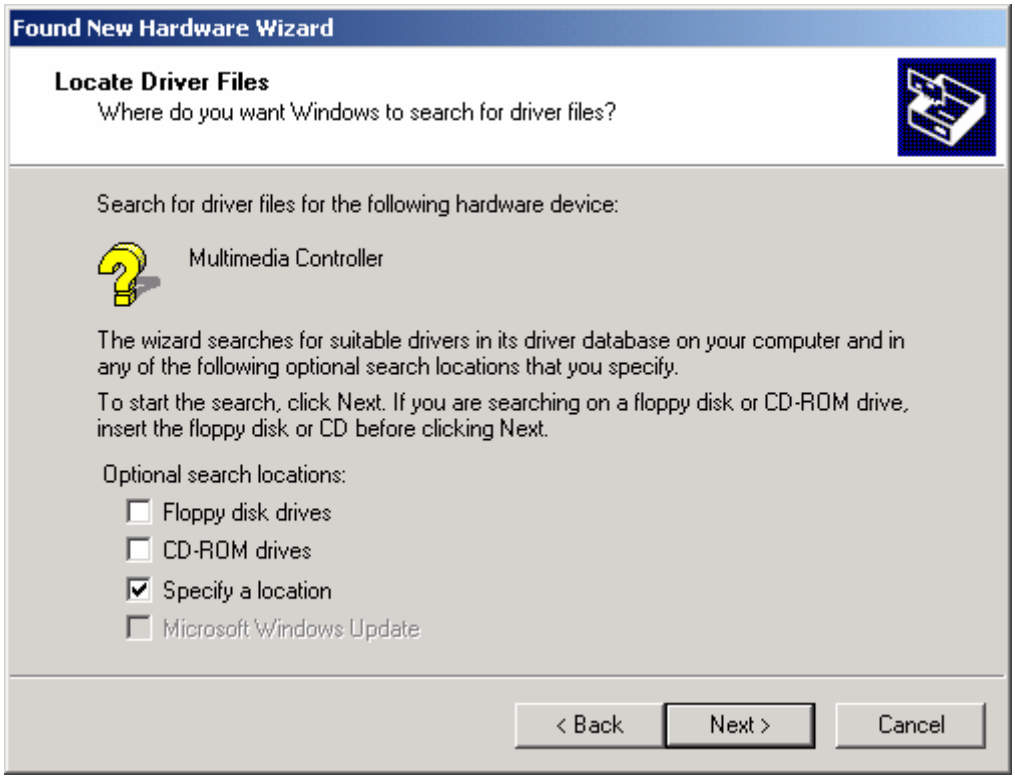
Windows 2000 will automatically find Protectserve Board as a new hardware device. And your system will detect Protectserve Board as a PCI Multimedia Device as shown below. Click NEXT to continue



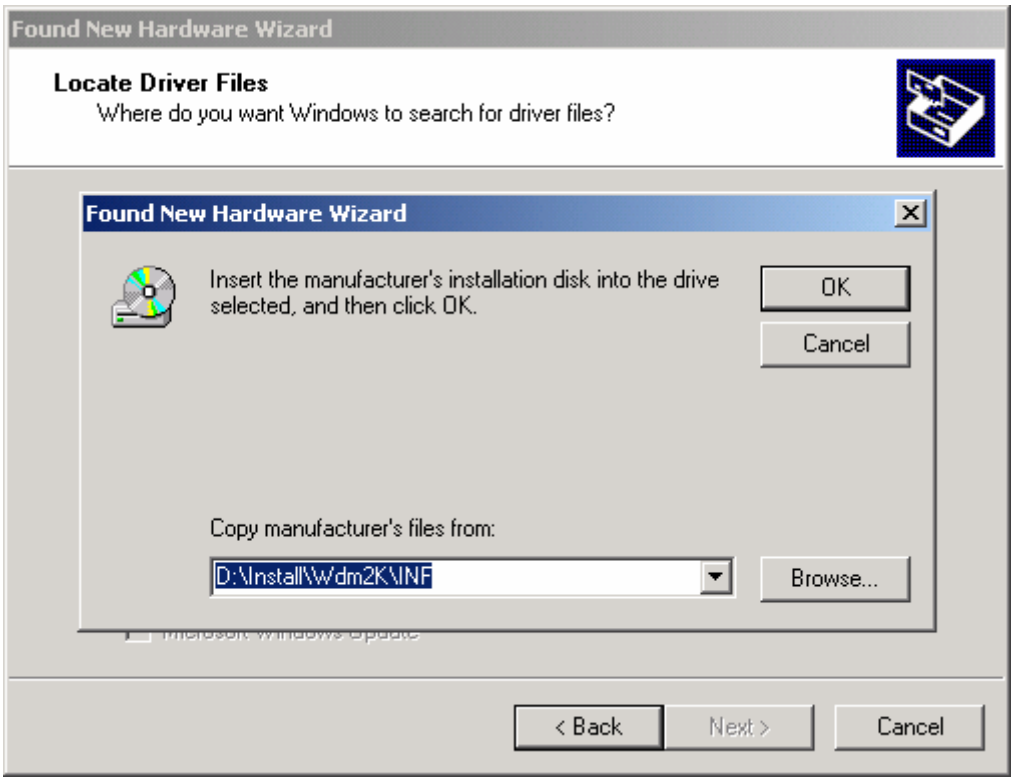
Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
Multimedia Controller
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

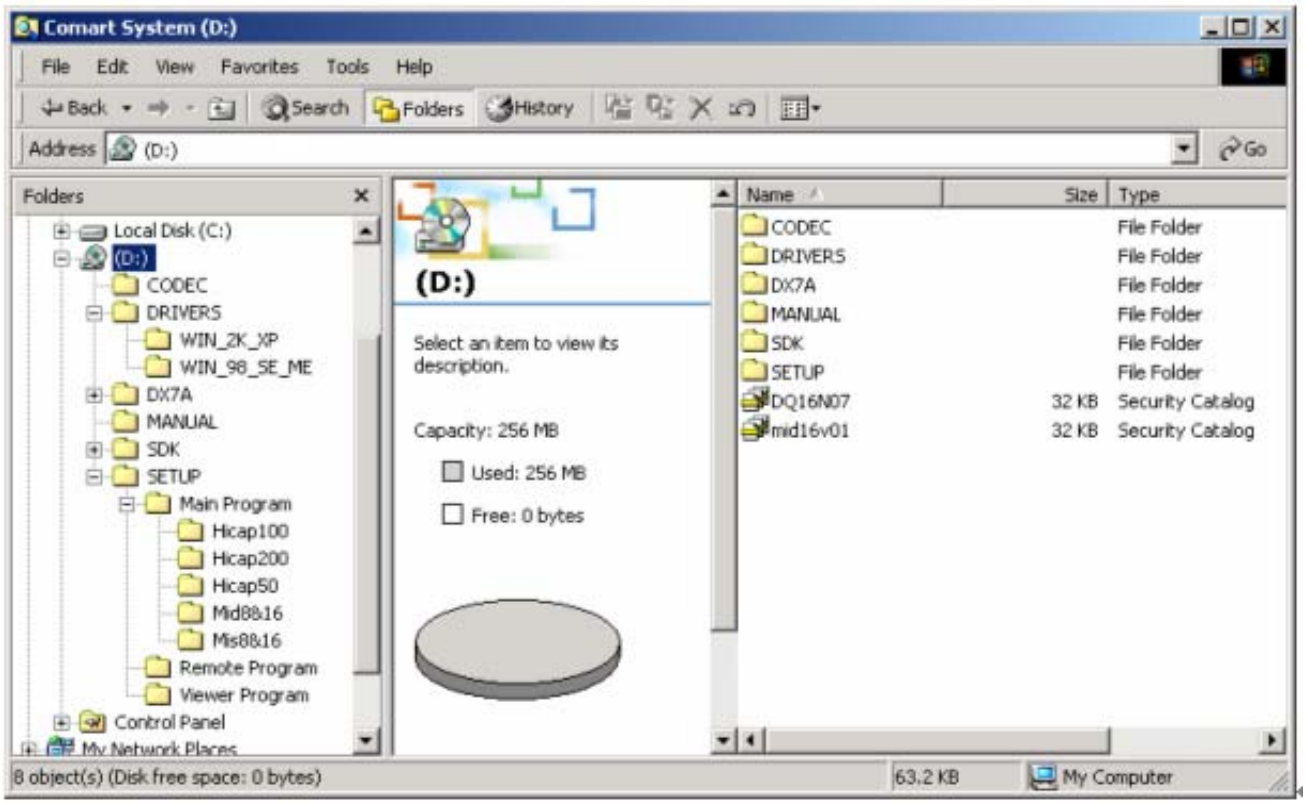
Insert your CD in your CD-ROM drive and Click ‘Next’ to continue.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
Multimedia Controller
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

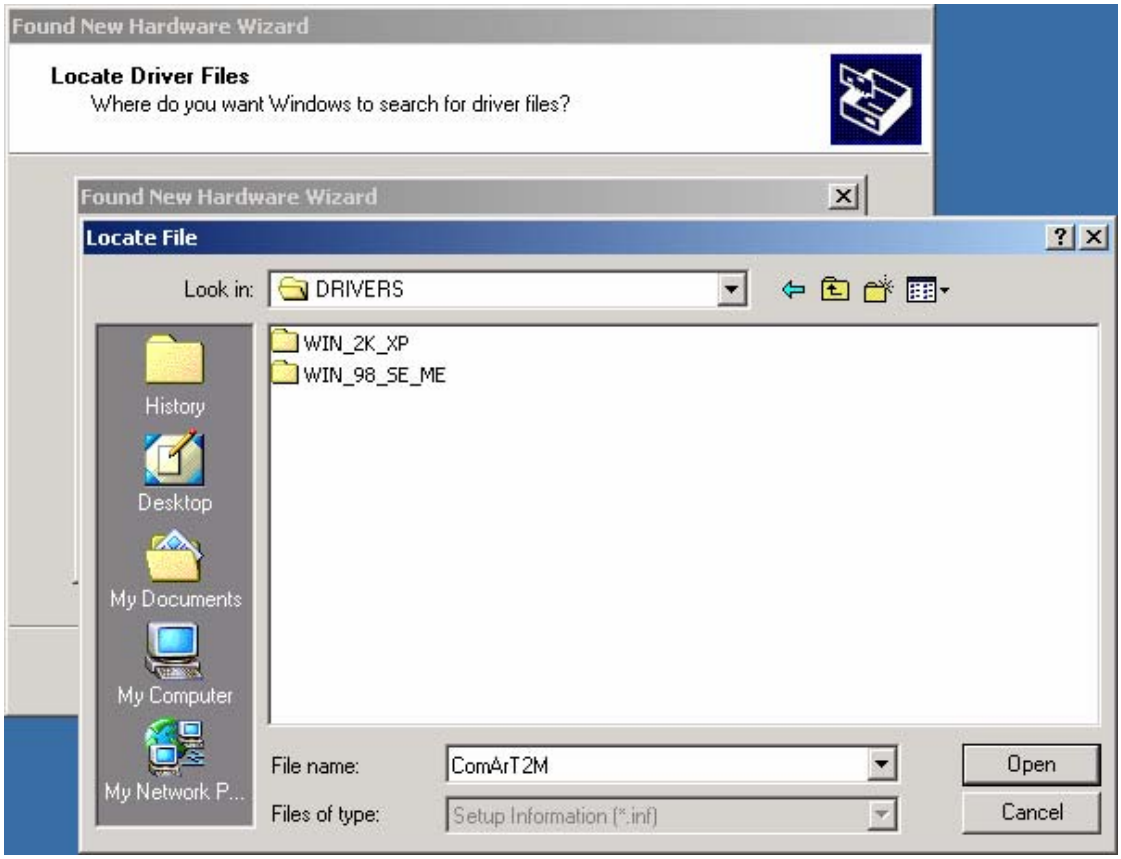
Click ‘Specify a location’ and ‘Next’ to continue.

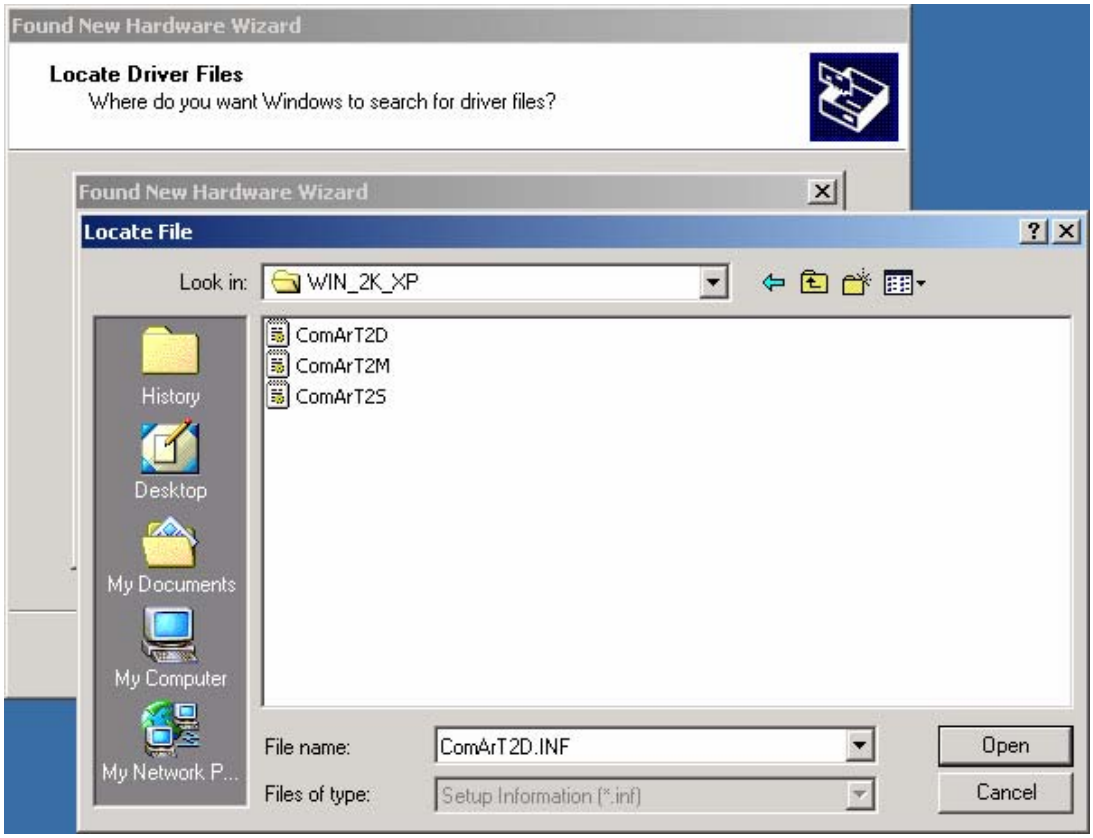


For the Windows2000 PNP driver of Hicap200, Click 'Browse'.

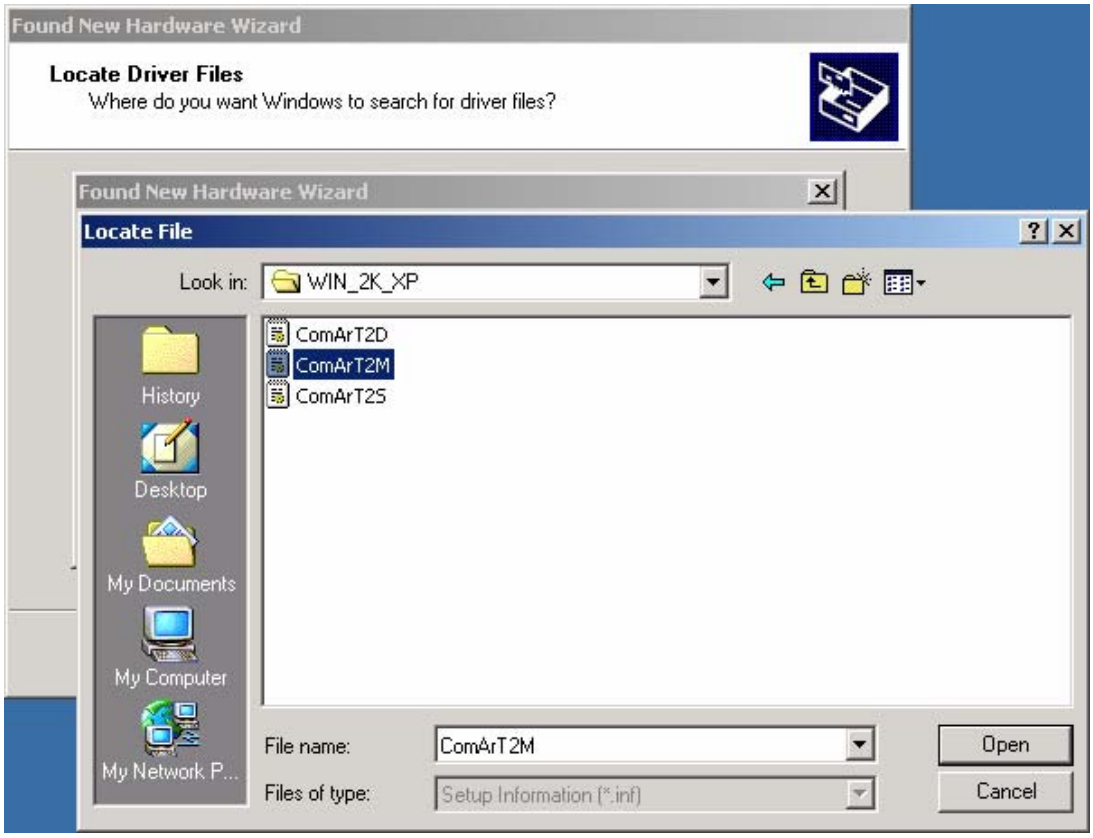


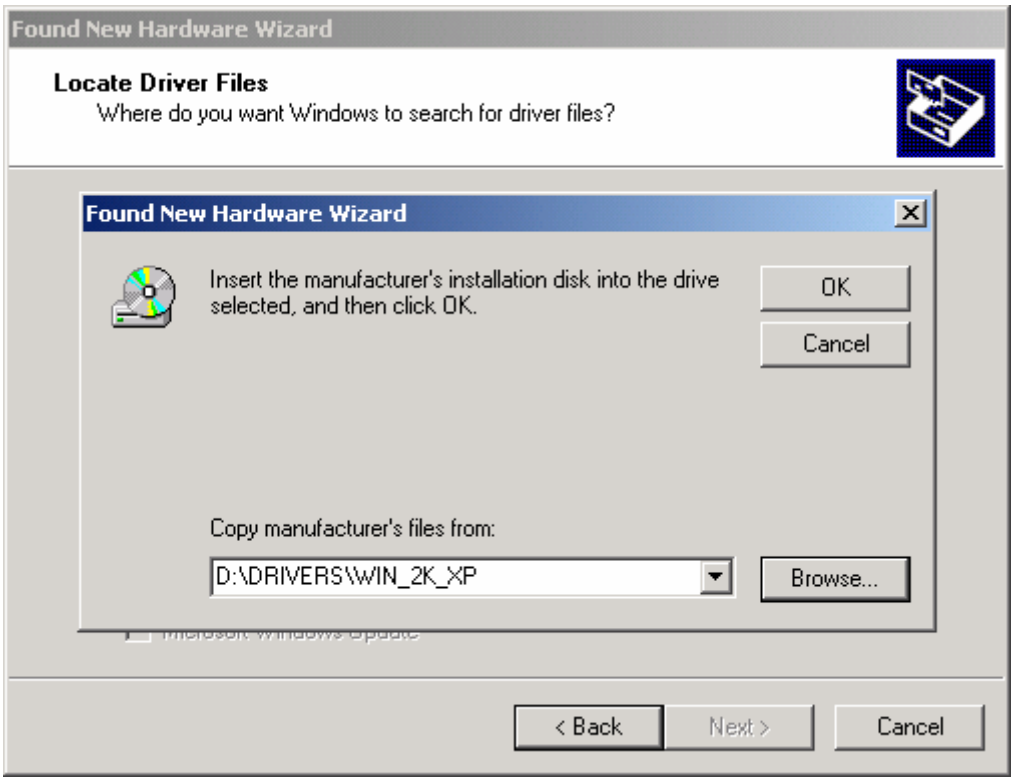
Find the ‘WIN_2K_XP’ directory on your CD and Click ‘Open’.



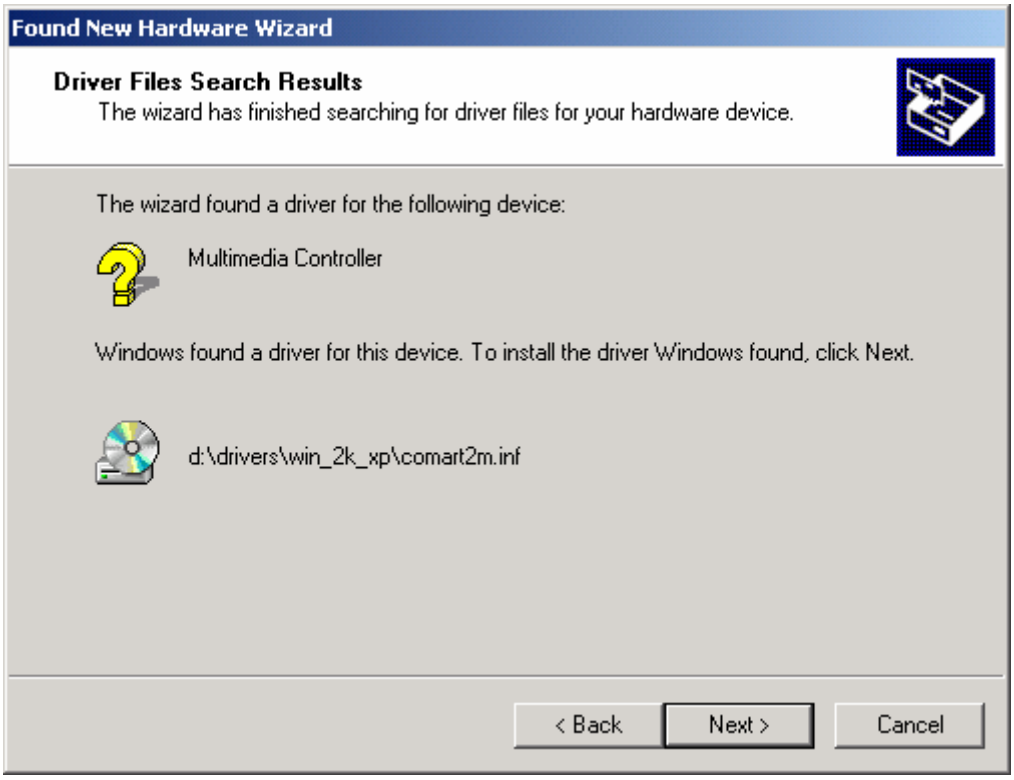


You will find 'ComArT2M.INF' file in the directory. Open the file.

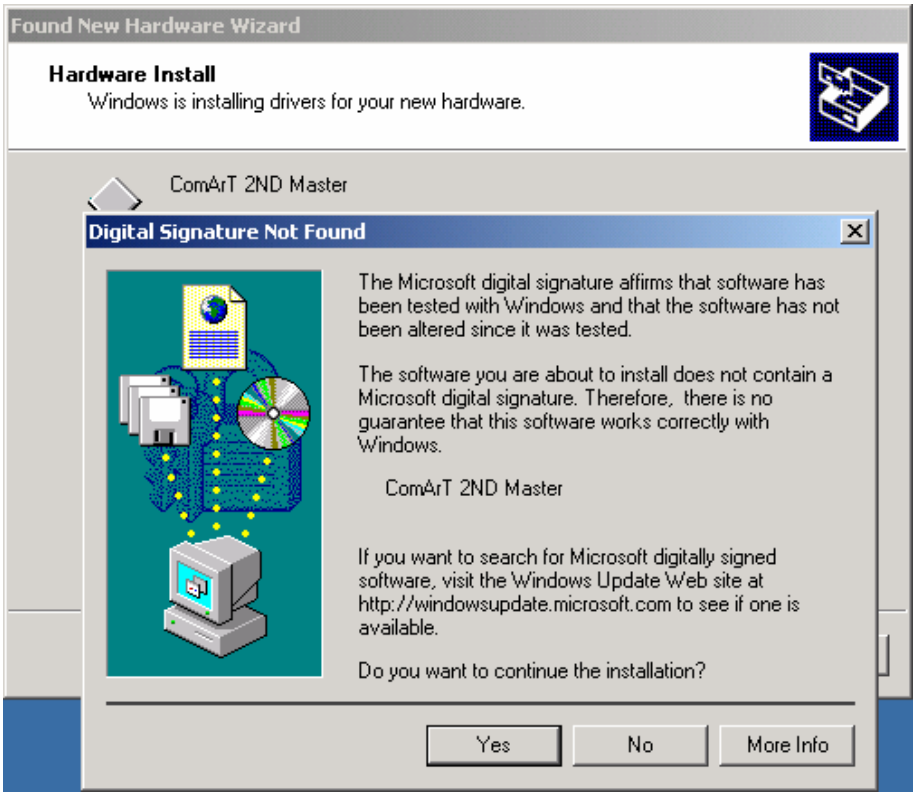




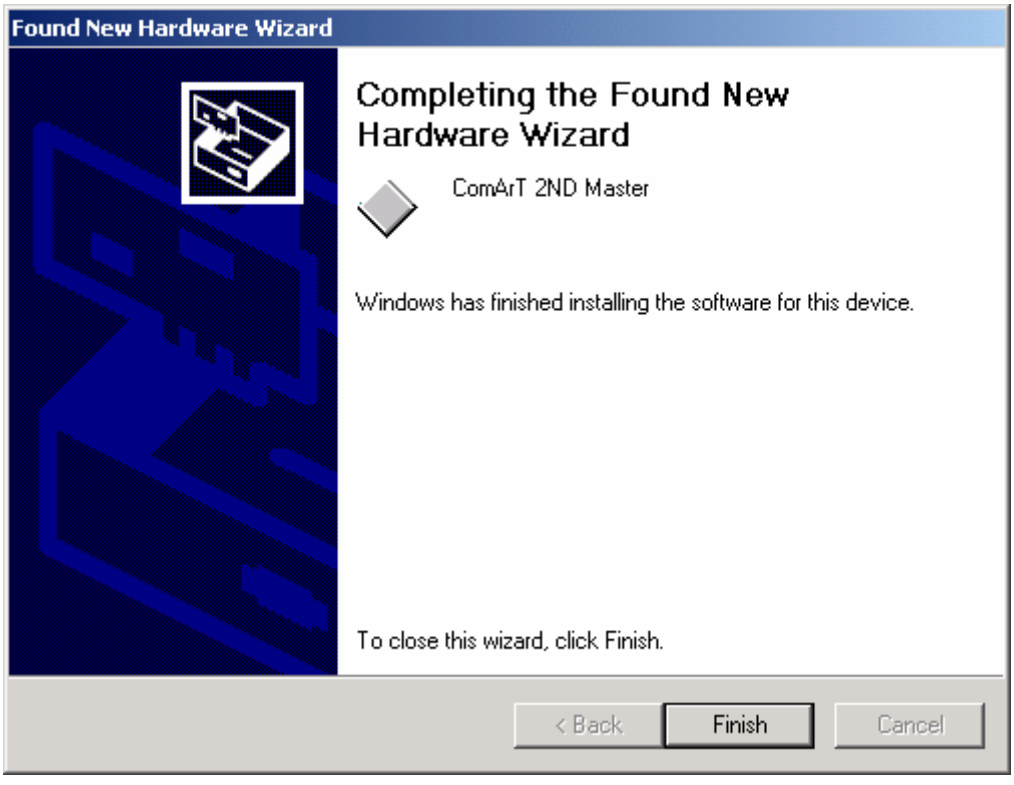
Click ‘Ok’ to continue.


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Multimedia Controller
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\drivers\win_2k_xp\comart2m.inf
< Back
Next >
Cancel

Click ‘Next’ to continue.

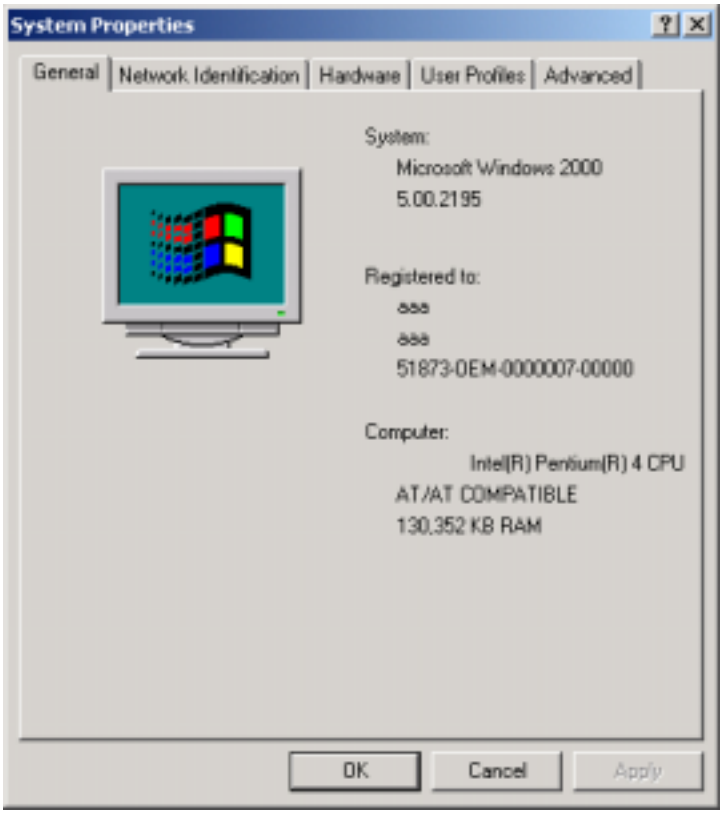

Found New Hardware Wizard
Hardware Install
Windows is installing drivers for your new hardware.
ComArT 2ND Master
Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
ComArT 2ND Master
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

Click 'Yes' to continue.

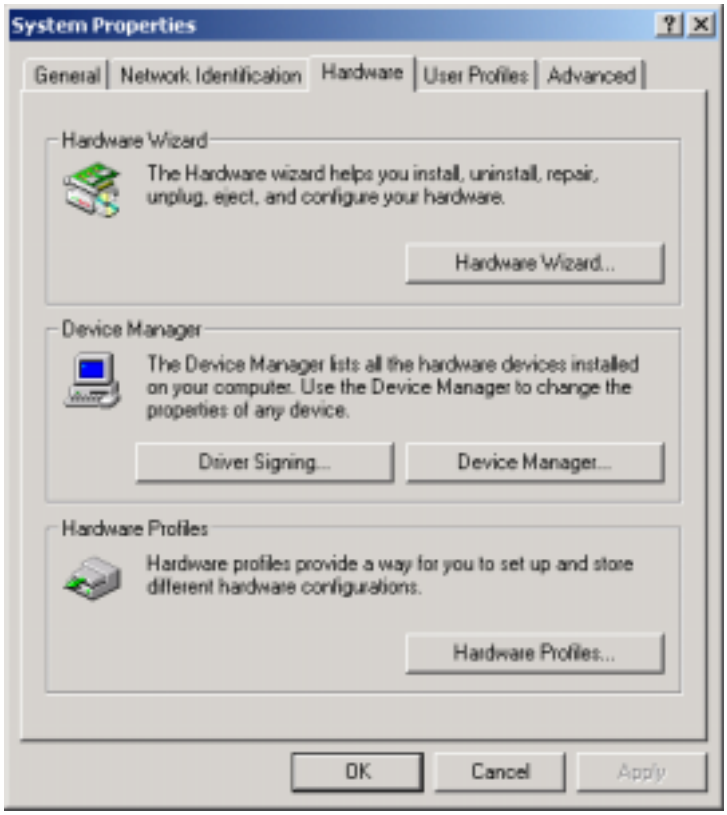

Found New Hardware Wizard
Completing the Found New Hardware Wizard
ComArT 2ND Master
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

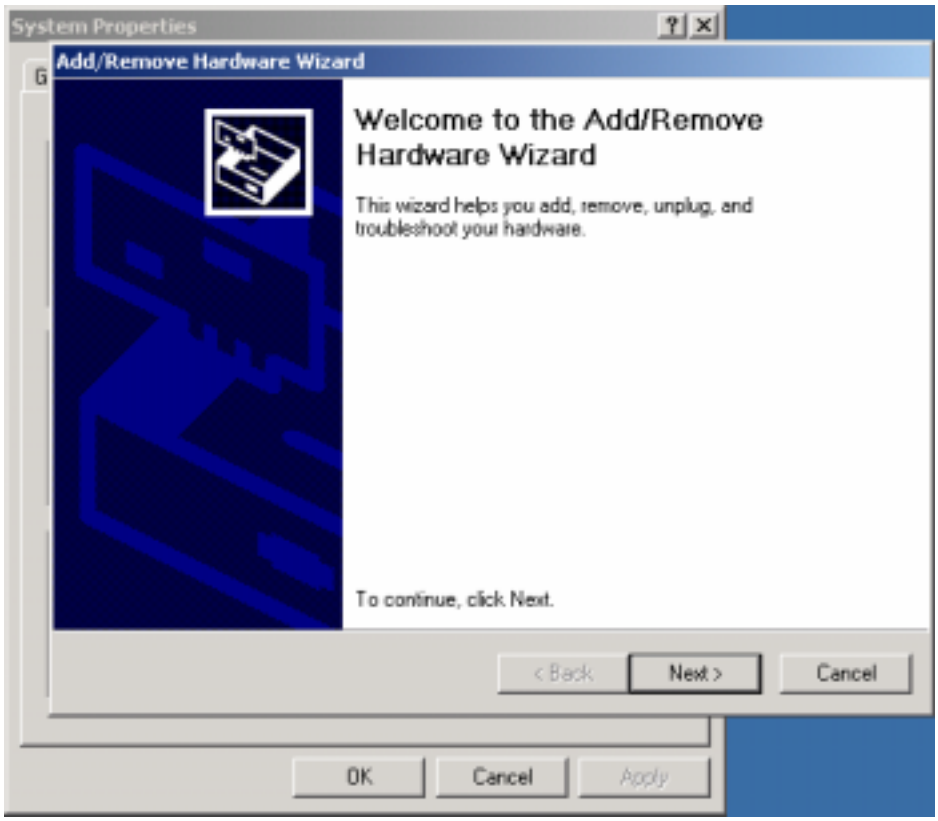
Click 'Finish' to continue. Then, the four master drivers are installed on your system.

Then, go to 'System Properties' and click 'Hardware'

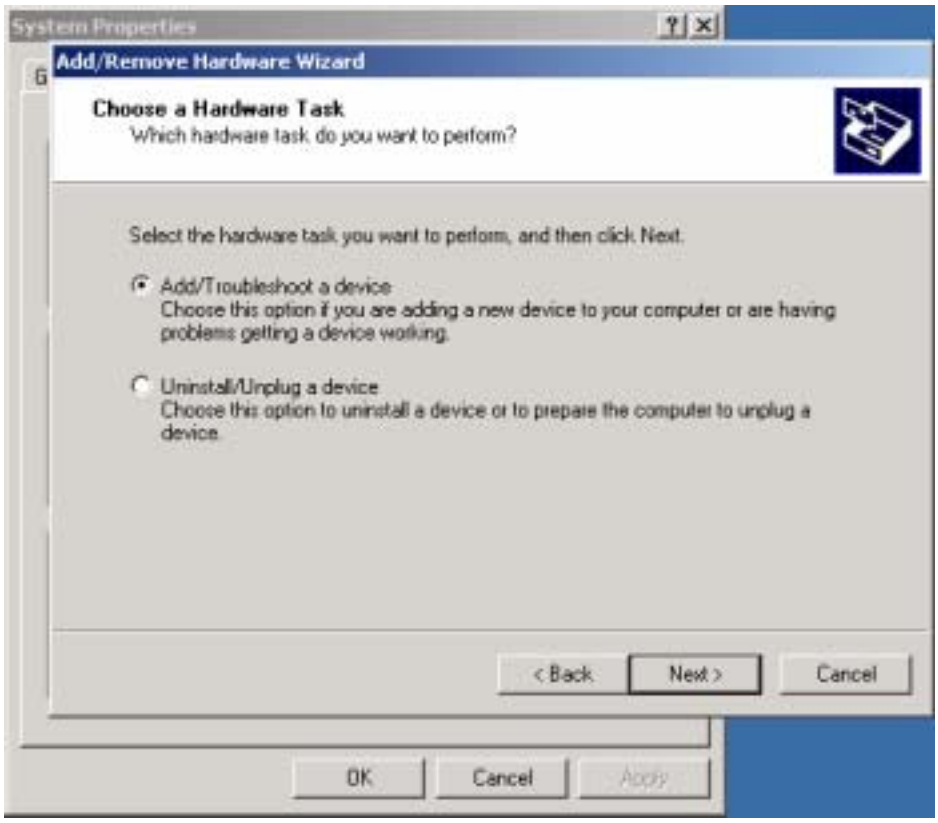


Then, click ‘Hardware Wizard…’

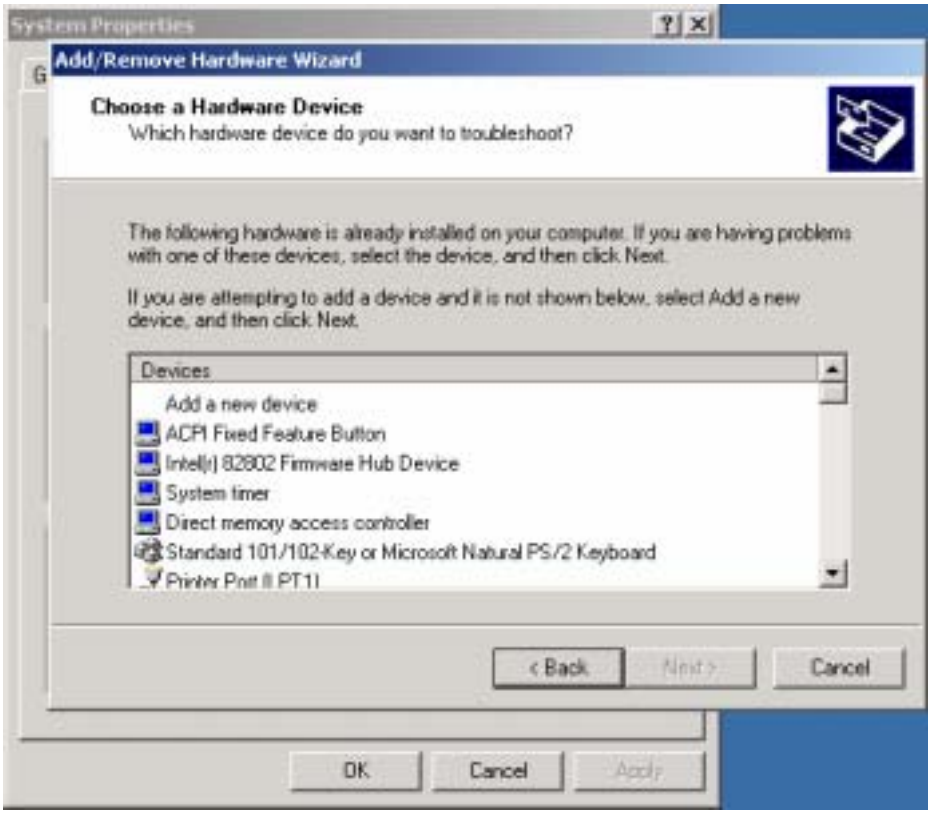

System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply



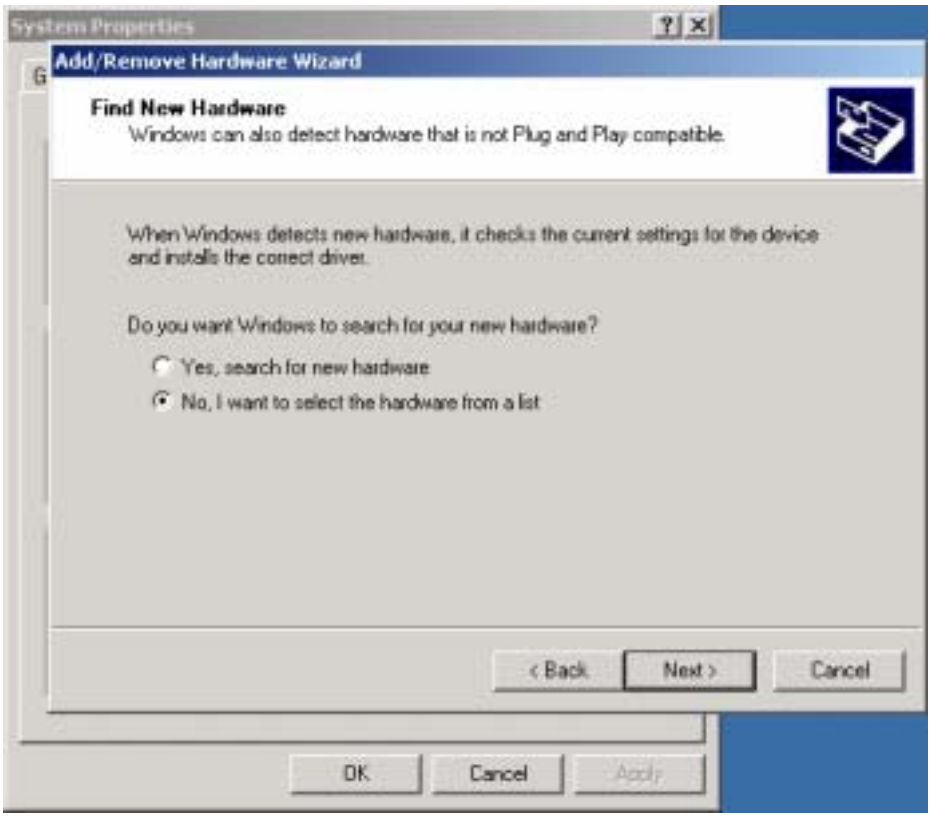
Click ‘Next’ to continue.


System Properties
Add/Remove Hardware Wizard
Choose a Hardware Task
Which hardware task do you want to perform?
Select the hardware task you want to perform, and then click Next.
Add/Troubleshoot a device
Choose this option if you are adding a new device to your computer or are having problems getting a device working.
Uninstall/Unplug a device
Choose this option to uninstall a device or to prepare the computer to unplug a device.
< Back
Next >
Cancel
OK
Cancel
Apply

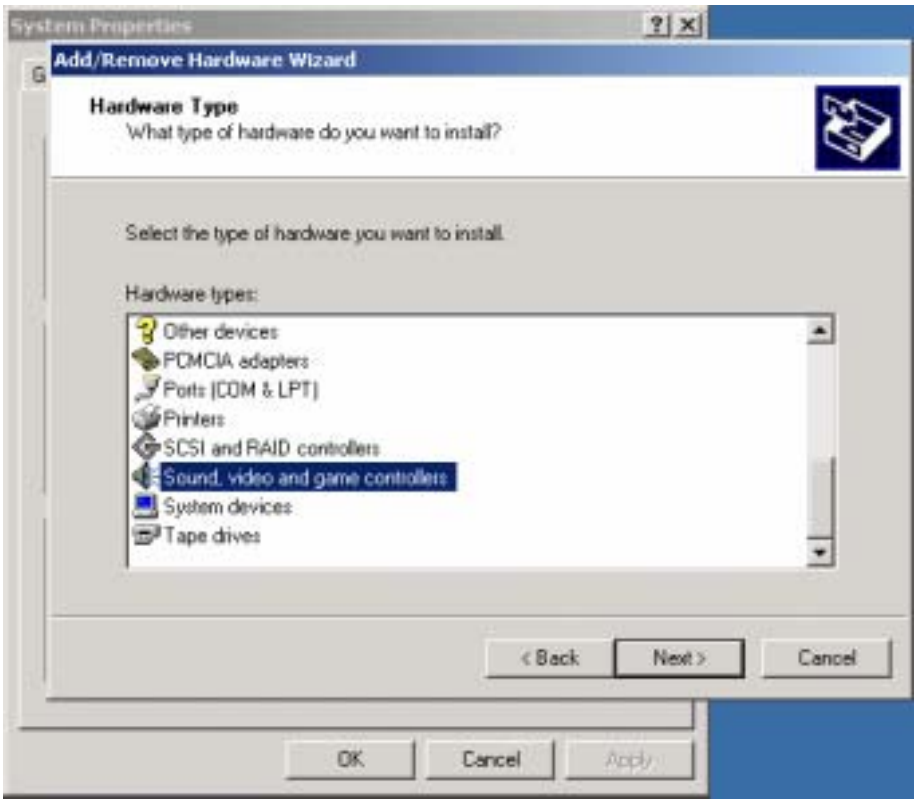
Select ‘Add/Troubleshoot a device’ and ‘Next’ to continue.


System Properties
Add/Remove Hardware Wizard
Choose a Hardware Device
Which hardware device do you want to troubleshoot?
The following hardware is already installed on your computer. If you are having problems with one of these devices, select the device, and then click Next.
If you are attempting to add a device and it is not shown below, select Add a new device, and then click Next.
Devices
Add a new device
ACPI Fixed Feature Button
Intel(r) 82802 Firmware Hub Device
System timer
Direct memory access controller
Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
< Back
Next >
Cancel
OK
Cancel
Apply

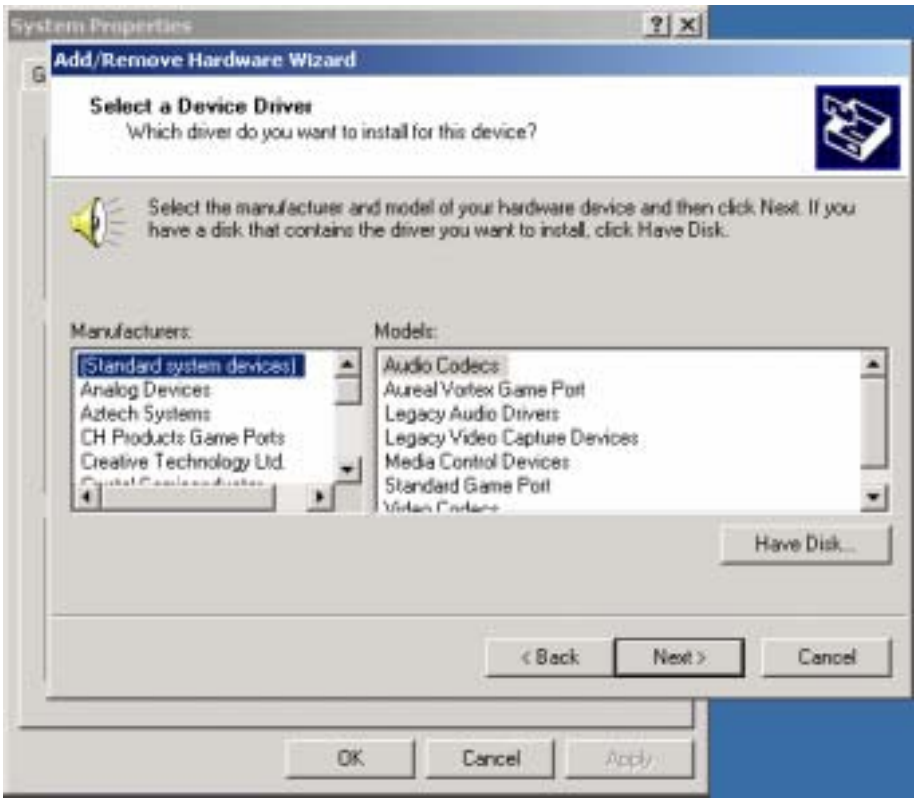
Select ‘Add a new device’ and then click ‘Next’ to continue.


System Properties
Add/Remove Hardware Wizard
Find New Hardware
Windows can also detect hardware that is not Plug and Play compatible.
When Windows detects new hardware, it checks the current settings for the device and installs the correct driver.
Do you want Windows to search for your new hardware?
Yes, search for new hardware
No, I want to select the hardware from a list
< Back
Next >
Cancel
OK
Cancel
Apply

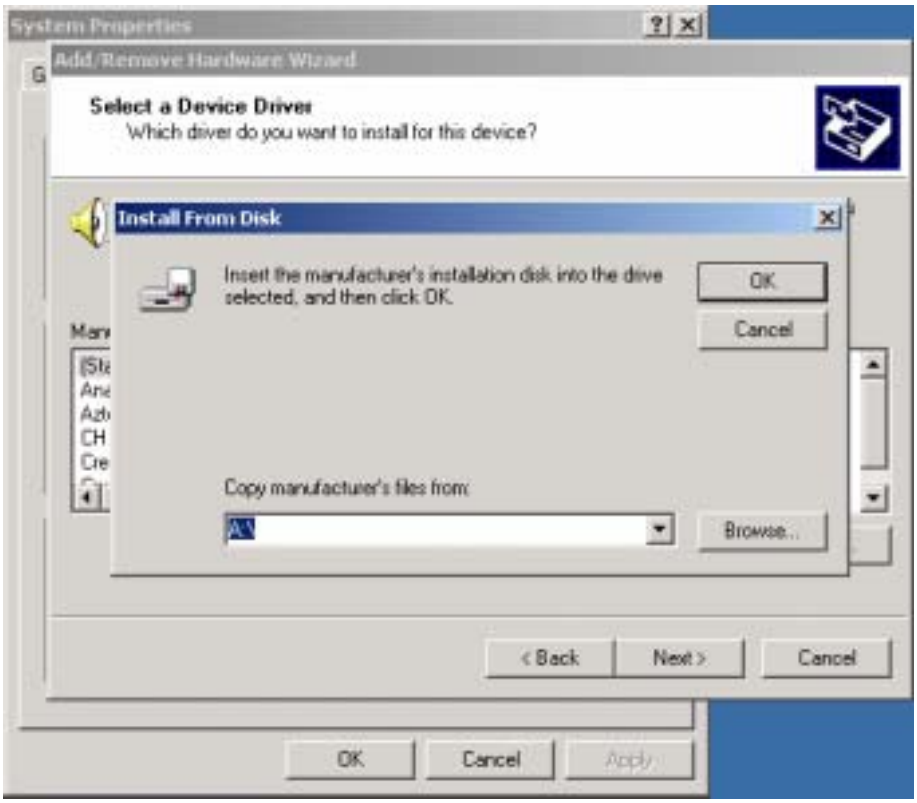
Select ‘No, I want to select the hardware from a list’ and click ‘Next’.



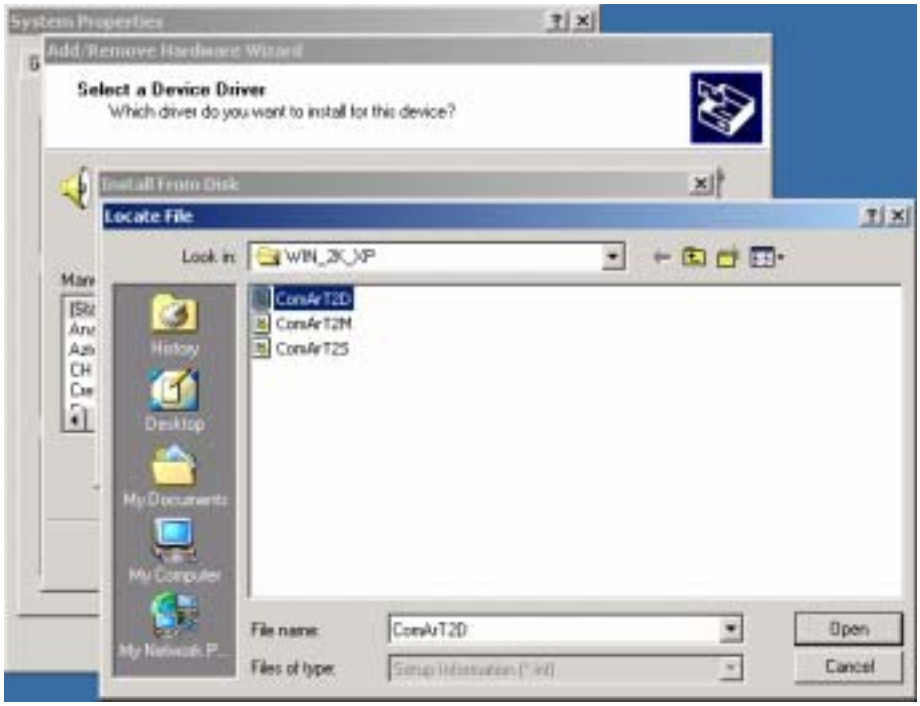
Select ‘Sound, video and game controllers’ and click ‘Next’ to continue.



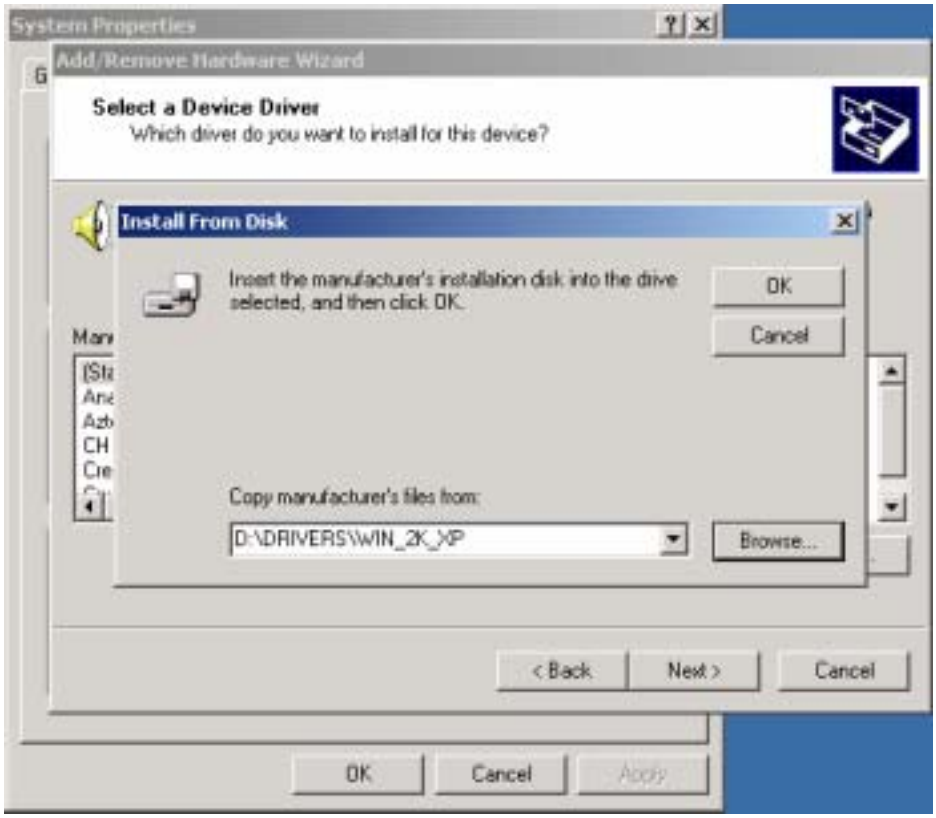
Click ‘Have Disk…’ and ‘Next’ to continue.



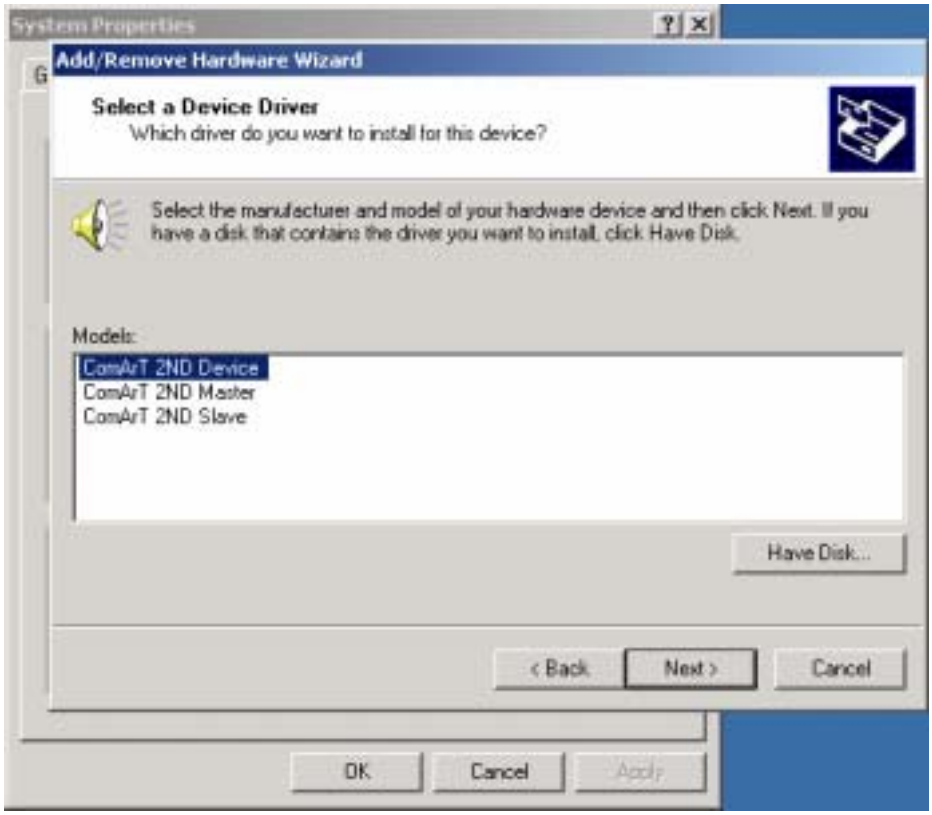
Click ‘Browse…’ to find the ComArT driver.



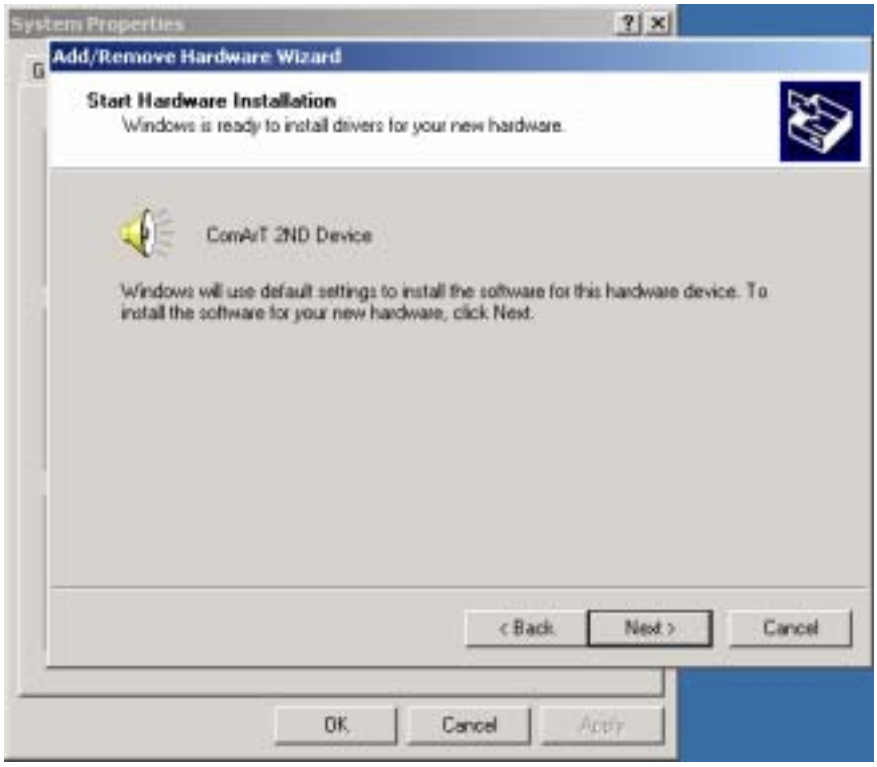
Find ‘ComArT2D.INF’ file in WIN_2K_XP directory and Open the file.



Click ‘Next’ to continue.


System Properties
Add/Remove Hardware Wizard
Select a Device Driver
Which driver do you want to install for this device?
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Models:
ComArT 2ND Device
ComArT 2ND Master
ComArT 2ND Slave
Have Disk...
< Back
Next >
Cancel
OK
Cancel
Apply

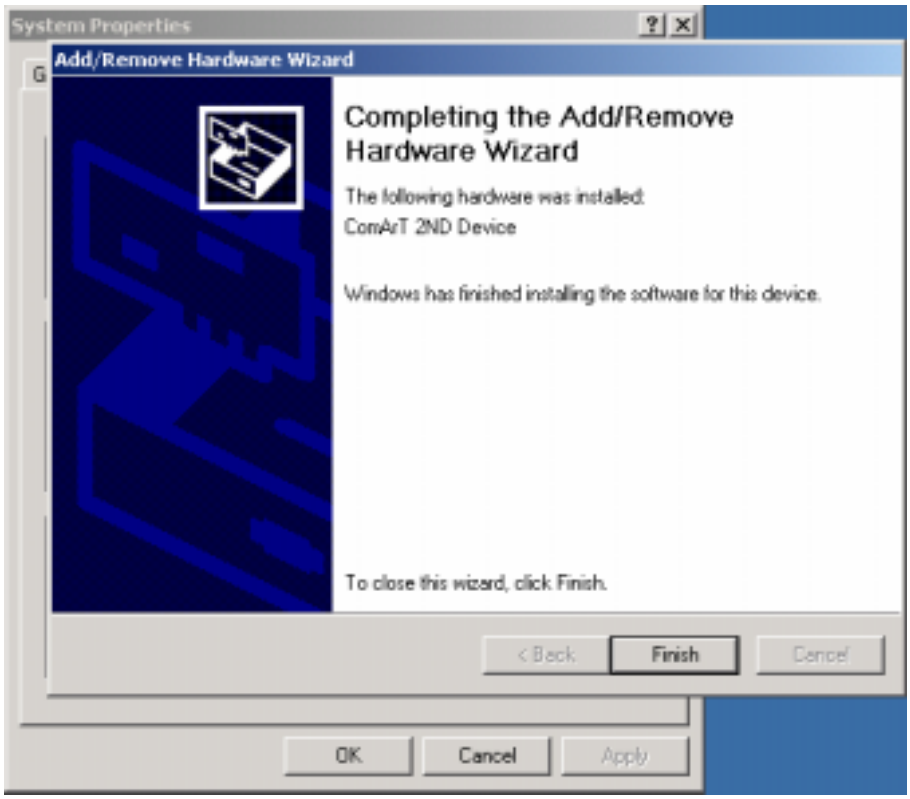
Select ‘ComArT2ND Device’ and click ‘Next’ to continue.


System Properties
Add/Remove Hardware Wizard
Start Hardware Installation
Windows is ready to install drivers for your new hardware.
ComAT 2ND Device
Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
< Back
Next >
Cancel
OK
Cancel
Apply

Click ‘Next’ to continue.

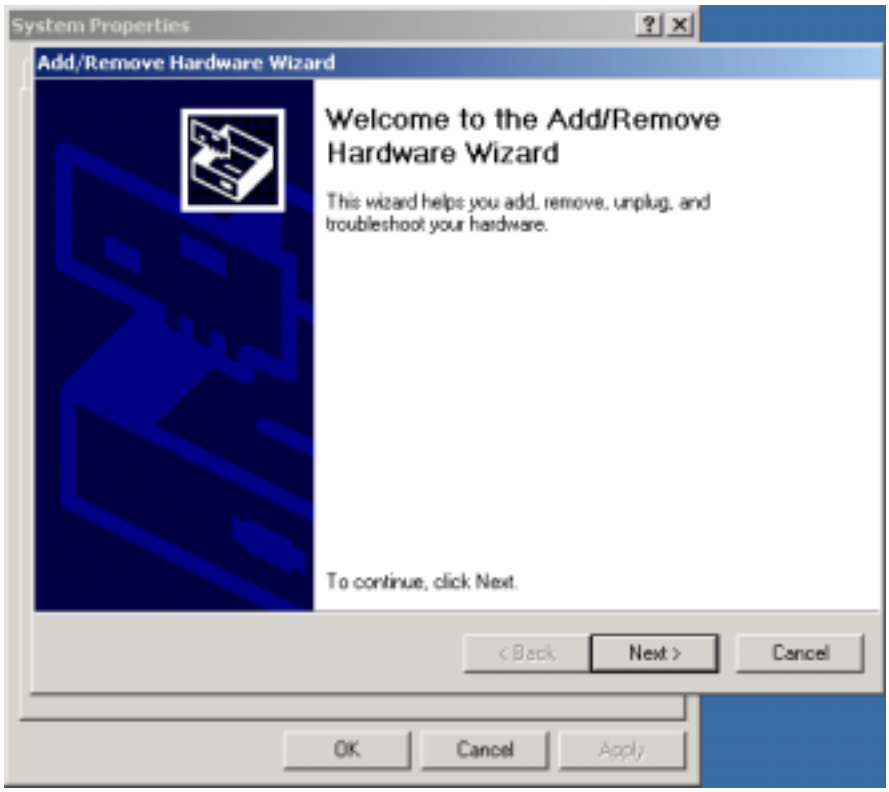
System Properties
Add/Remove Hardware Wizard
Hardware Install
Windows is installing drivers for your new hardware.
Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
ComAT 2ND Device
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info
OK
Cancel
Apply

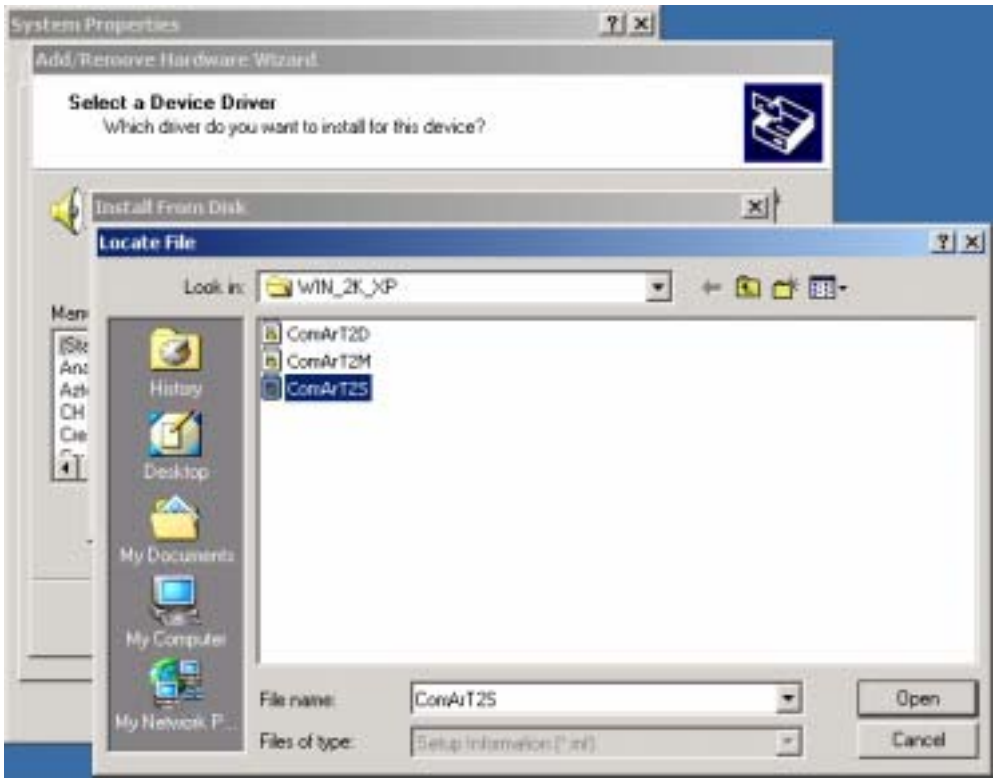
Click ‘Yes’ to continue.

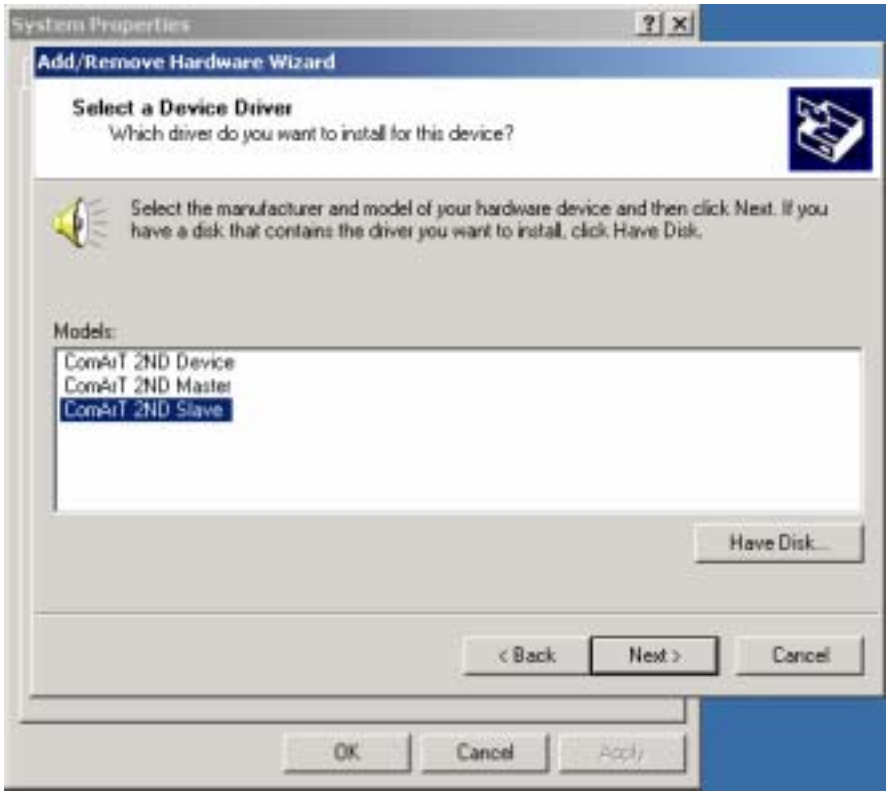


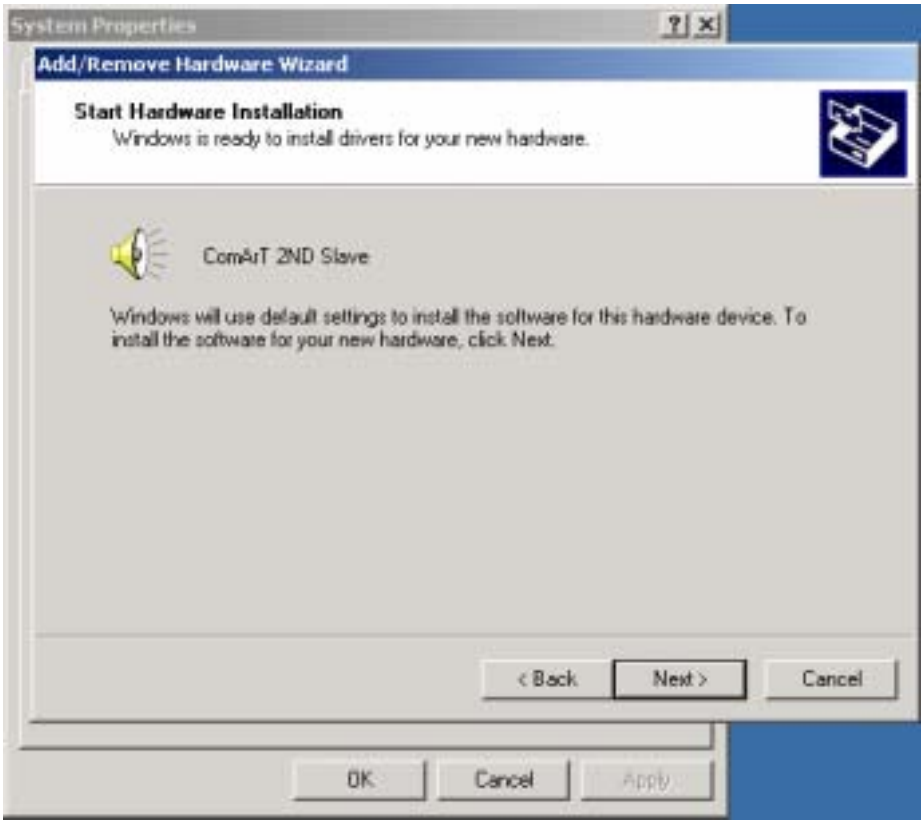
Click ‘Finish’ to finish installing ‘ComArT2D.INF’ driver on your system.

According to the same direction to install ‘ComArT2D.INF’ above, you need to install ‘ComArT2S.INF’ for ‘ComArT 2ND Slave’ Driver.

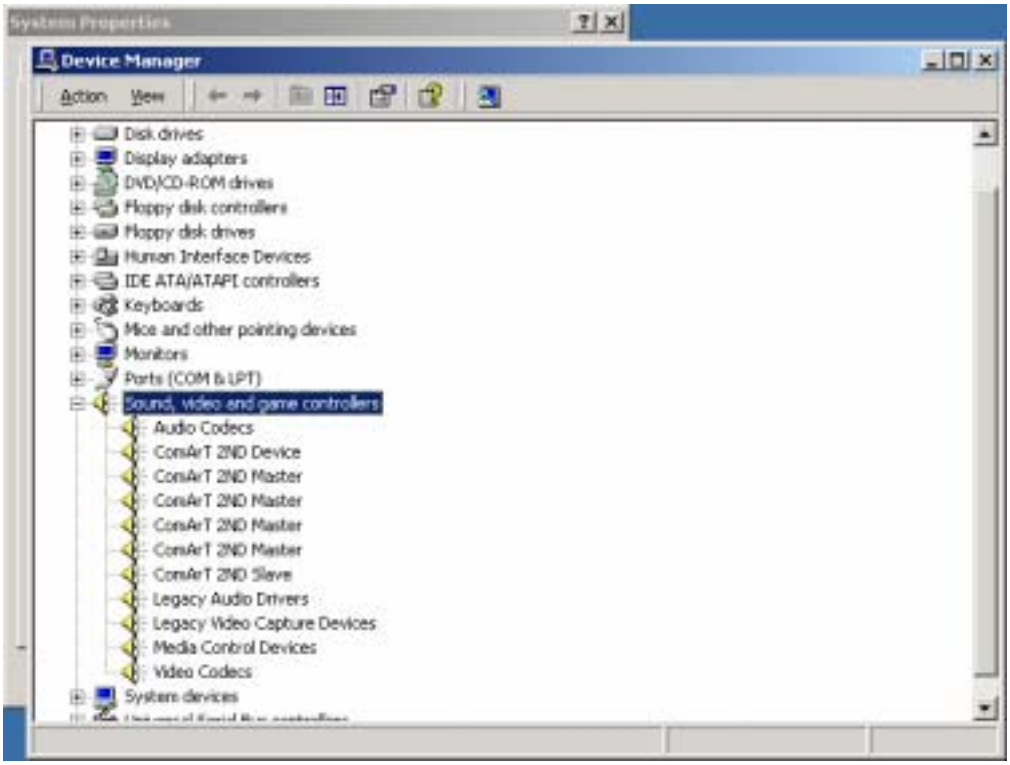



System Properties
Add/Remove Hardware Wizard
Select a Device Driver
Which driver do you want to install for this device?
Install From Disk
Locate File
Look in:
WIN_2K_XP
ComArT2D
ComArT2M
ComArT2S
History
Desktop
My Documents
My Computer
My Network P...
File name:
ComArT2S
Files of type:
Open
Cancel


System Properties
Add/Remove Hardware Wizard
Select a Device Driver
Which driver do you want to install for this device?
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Models:
ComArT 2ND Device
ComArT 2ND Master
ComArT 2ND Slave
Have Disk...
< Back
Next >
Cancel
OK
Cancel
Apply


System Properties
Add/Remove Hardware Wizard
Start Hardware Installation
Windows is ready to install drivers for your new hardware.
ComArT 2ND Slave
Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
< Back
Next >
Cancel
OK
Cancel
Apply

After installing ComArT 2ND Slave Driver as well, check your 'Device Manager' if all the drivers are installed successfully on your system as below.



There should be some drivers as follows on the Device Manager of your system per model if you install successfully Protectserve DVR board.

Because Protectserve models share the same driver, you do not have to install drivers per model. Although there are more master drivers than the actual number of your target board, it does not matter at all with your system because your system will just use necessary drivers only for your target model. However, it matters if there are not enough Master drivers for your target board.

1. MIS8&16CH
    - ComArT 2ND Master
    - ComArT 2ND Master
    - ComArT 2ND Master
    - ComArT 2ND Slave
    - ComArT 2ND Device

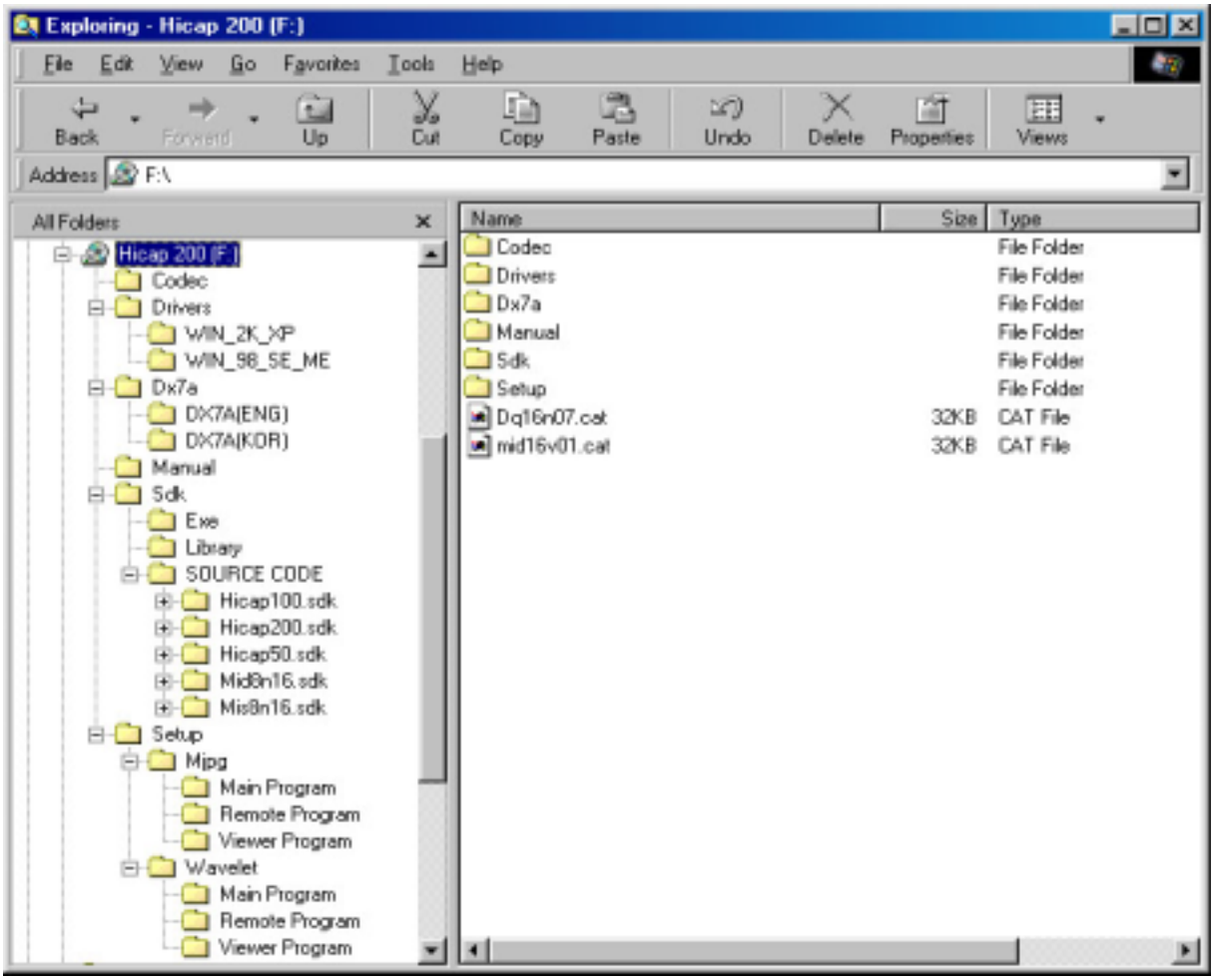
2. MID8&16CH
    - ComArT 2ND Master
    - ComArT 2ND Slave
    - ComArT 2ND Device

3. Hicap50
    - ComArT 2ND Master
    - ComArT 2ND Slave
    - ComArT 2ND Device

4. Hicap100
    - ComArT 2ND Master
    - ComArT 2ND Master
    - ComArT 2ND Slave
    - ComArT 2ND Device

5. Hicap200
    - ComArT 2ND Master
    - ComArT 2ND Master
    - ComArT 2ND Master
    - ComArT 2ND Master
    - ComArT 2ND Slave
    - ComArT 2ND Device

8. APPLICATION SOFTWARE INSTALLATION



As you can see on the CD provided, there are two kind of Application software we provide. MJPEG Application provides better video quality and Wavelet Application provides smaller file sizes. So, you can select the Application software you like.

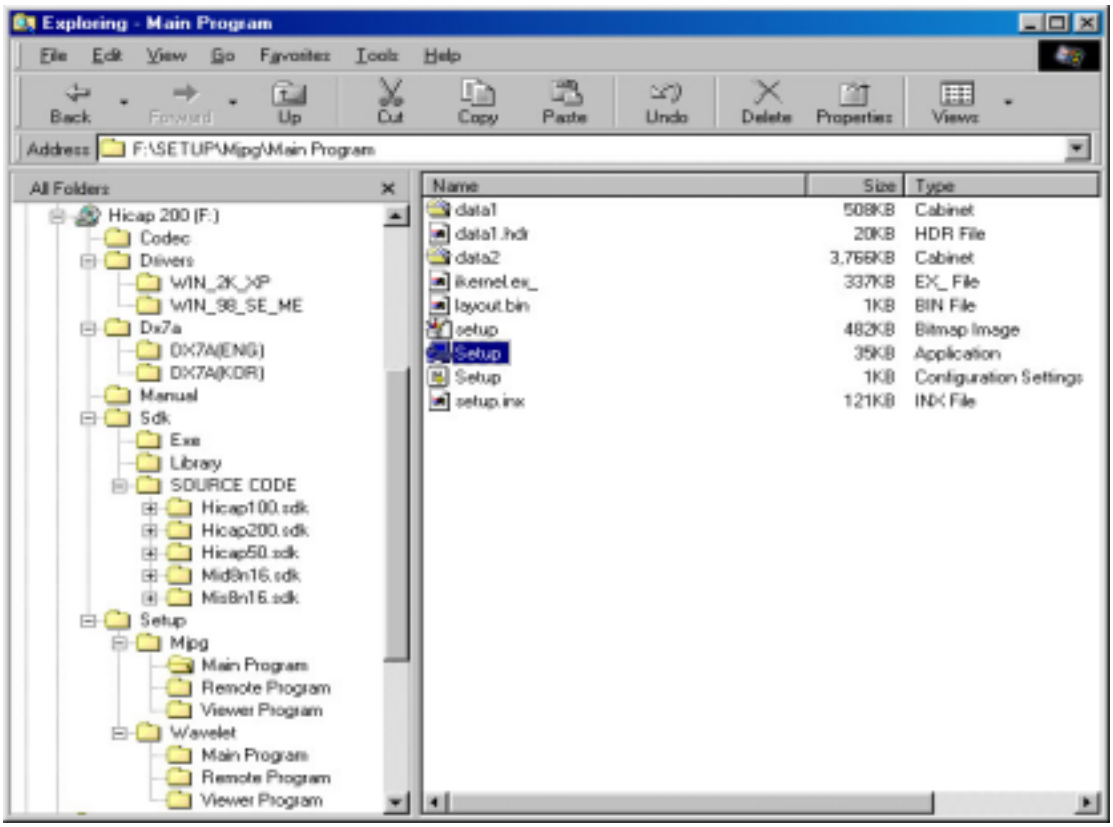
-. Main Program: Main DVR Application software
Once it is installed on your system, it will create a directory for DVR Application software and there will be all the programs including Remote & Viewer ones.

-. Remote Program: Client DVR Application software
There will be a setup program and you can easily install this program on any computer you like use this software.

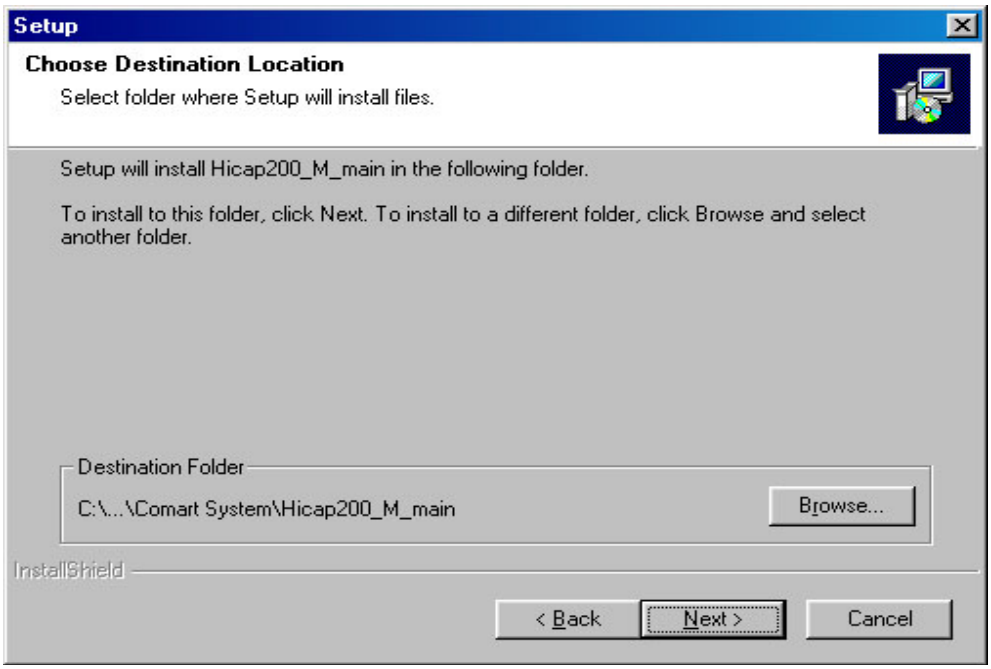
-. Viewer Program: An Independent software for playback backup data
There will be a setup program and you can easily install this program on any computer you like use this software.

The operation between MJPEG and Wavelet Applications is the same.

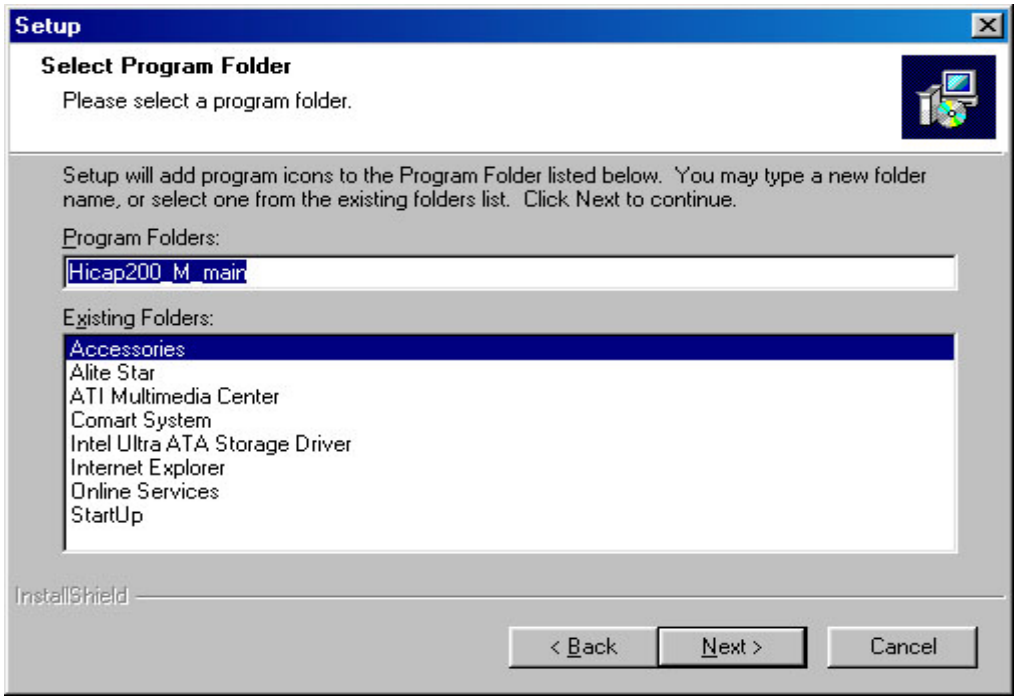
To install MJPEG Application software, go to the directory ‘Main Program’ of MJPG.



Run ‘Setup.exe’ file there to install the software.

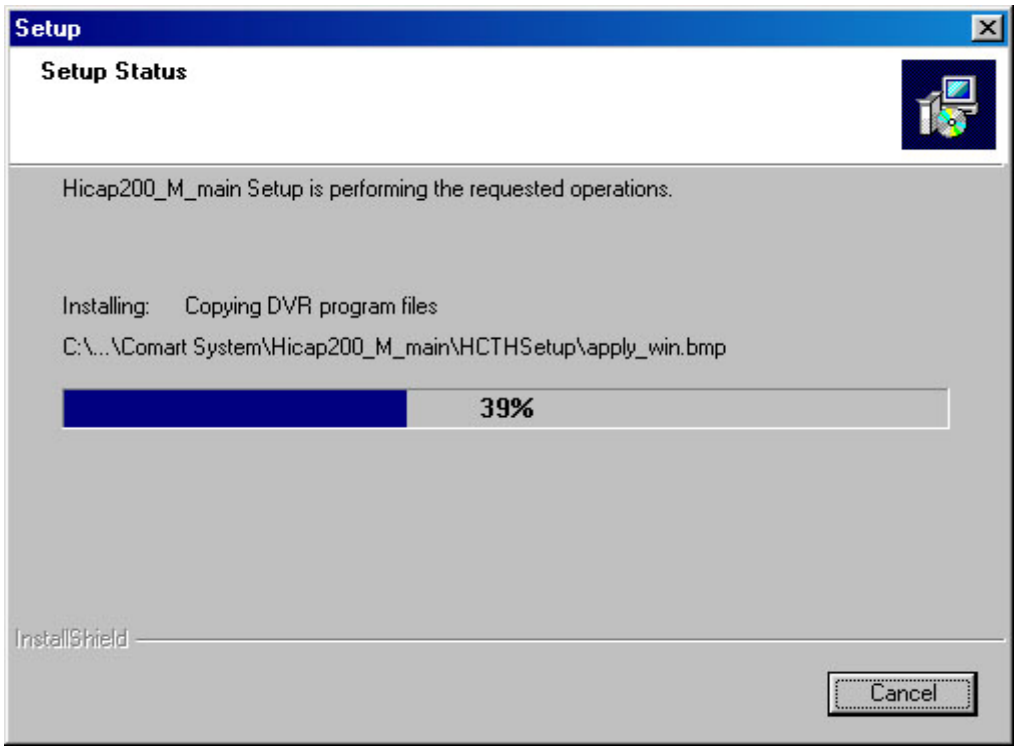

Setup
Choose Destination Location
Select folder where Setup will install files.
Setup will install Hicap200_M_main in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\...\Comart System\Hicap200_M_main
Browse...
InstallShield
< Back
Next >
Cancel

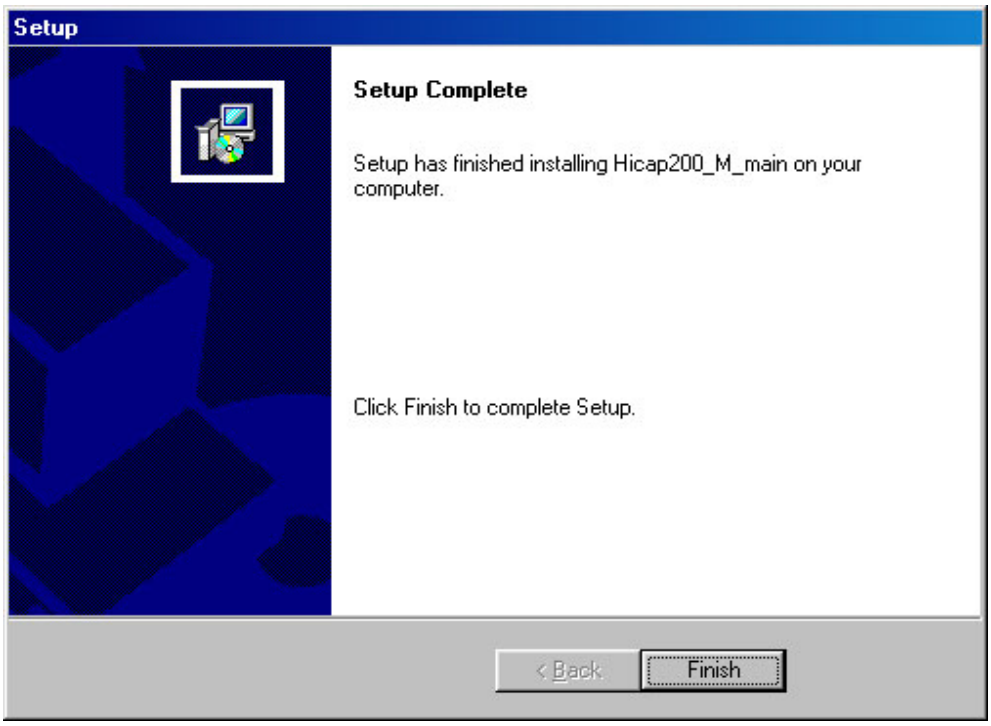
Then, Click ‘Next’ to continue installing on your system.



You can name 'Program Folders' as you like and Click 'Next' to continue.

Then, it will automatically install the main DVR Application software on your system.





Click ‘Finish’ to complete installing.

After installing the main DVR Application, you will see the above shortcut icon on your Main Windows screen. The first time you run the Application program, it will automatically take you to the Setup page.

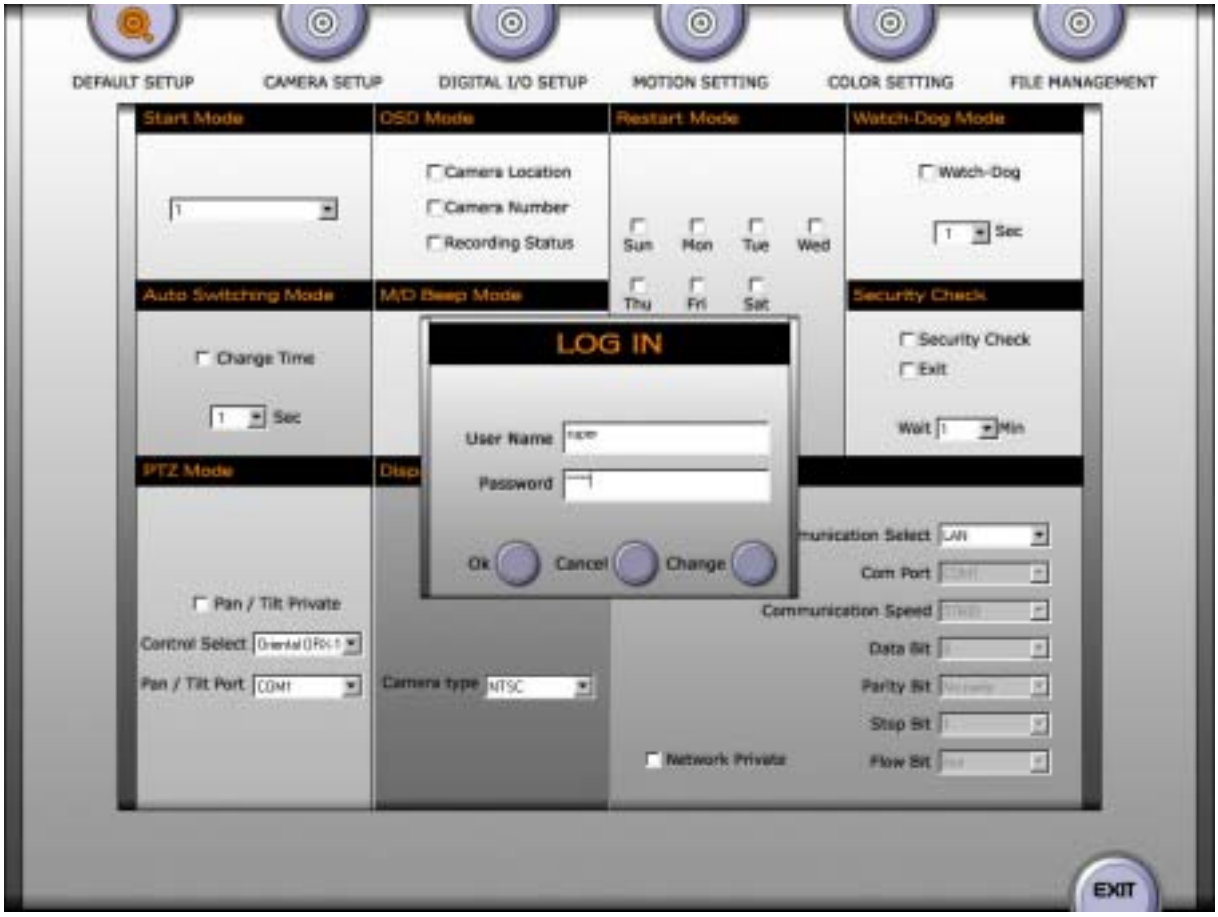
If you do not see the icon above or the next step is not properly working, then check below things out.

-. Drivers on the Device Manager are listed as it needs.

-. Install DirectX VER. 7.0 or newer version.

-. Install M-JPEG or Wavelet Software Codec.

9. SETUP PROGRAM MODE



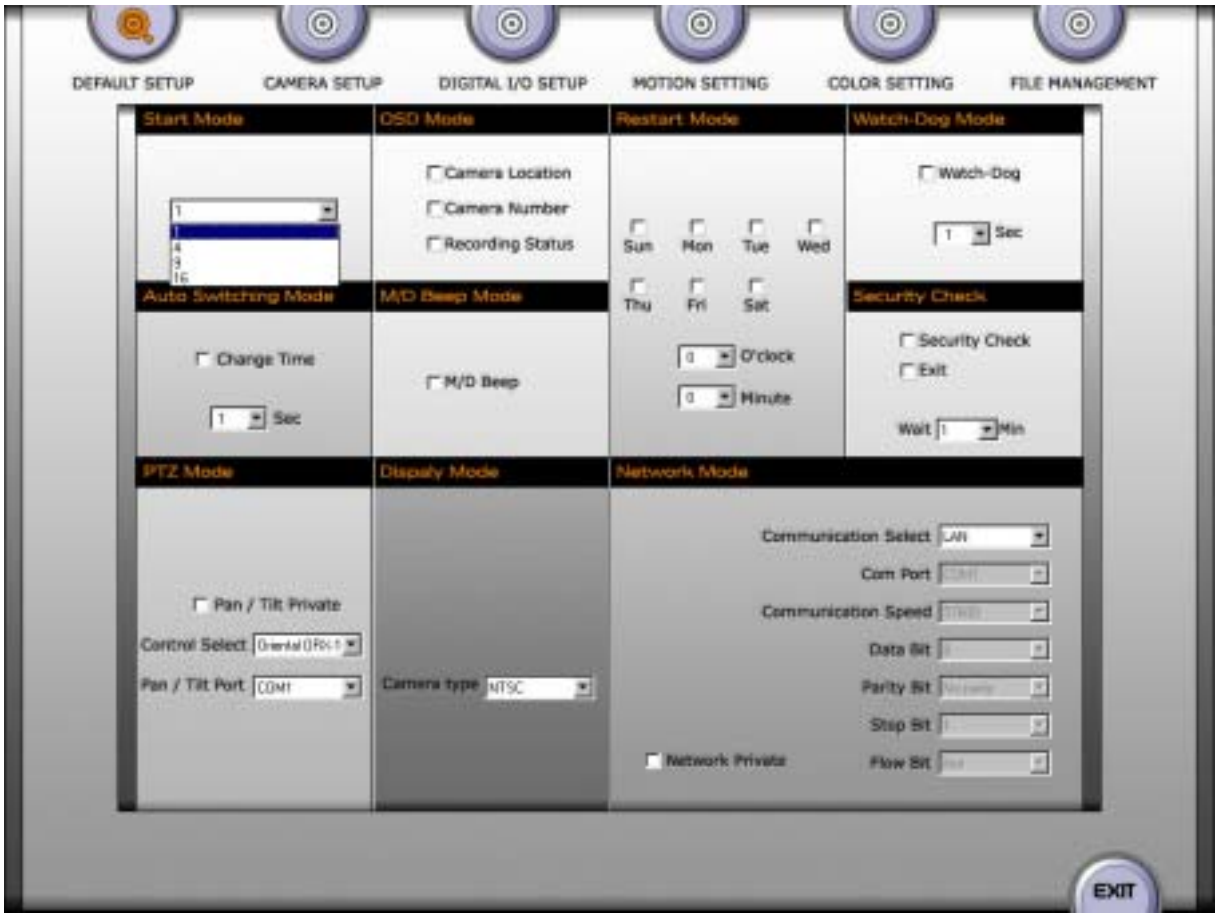
The first time running the shortcut icon, you will see this Setup page above.

IMPORTANT – "super" is the default username and password.

You will need to select options you wish and create image boxes. If you do not make selections, you cannot change password or run the main application program. The program will continue to prompt you to enter your username and password. If you need to stop this, press 'Ctrl+Alt+Del' and stop the task because the setup page will keep asking you username and password.

In this setup page you must make selections at least two things such as **camera setup & file management**, otherwise, it can not run the main application program properly.

!) This application does not support multi usernames and passwords but only one username and password. So, the user name and password you can change here are very important because they will be also used for other sections.



9-1. Default Setup

- **START MODE**

You may select an initial video monitoring type. This determines whether you will see one video at a time, 4 videos in Quad mode, 8 videos or 16 videos when you start the program.

- **OSD MODE**

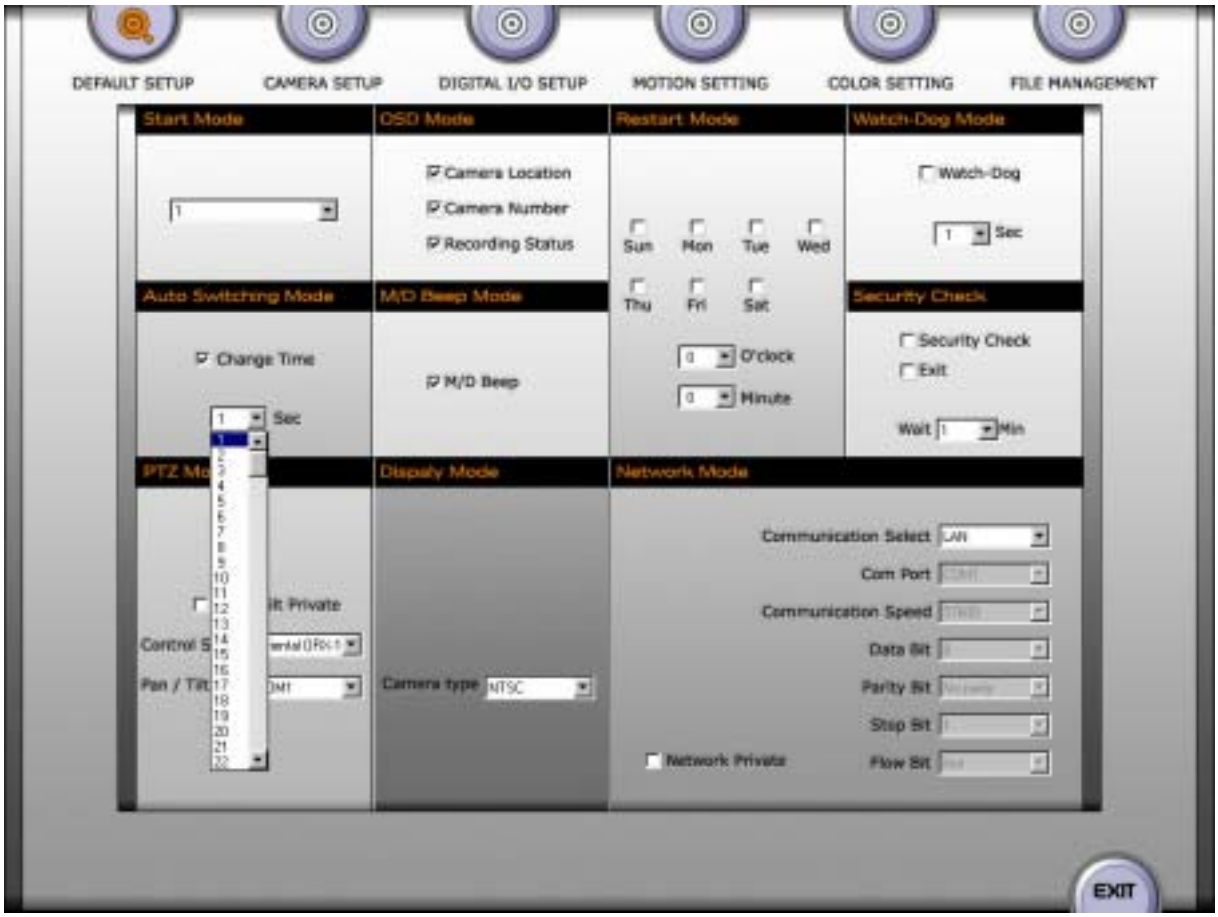
You can select to display Camera ‘Location’, ‘Number’ and ‘Recording Status’.

- **RESTART MODE**

You can choose to automatically shut down and restart the system at selected days and times.

- **WATCHDOG MODE**

To select Watchdog function, click ‘Watch-Dog’ and set the time. To use this function, you need to connect the Watchdog connector on our board with the reset switch of your motherboard.



- **AUTO SWITCHING MODE**

To select Auto Switching Mode, click 'Change time' and set the time. It will automatically switch video monitoring type (one video, 4 videos, and 8 videos) to the very next camera group per selected times.

- **M/D BEEP MODE**

To select M/D Beep Mode, just click the box. It will automatically make alarm signals out with motion detection if you connect an alarm with a camera in MOTION SETTING.

- **PANTILT MODE**

If you have pan/tilt devices you want to control, click 'Pan/Tilt private' and select the brand and the port you want to use. If you have any Pan/Tilt brand you wish to use, we can implement the brand into our Application software but need you to send us a sample PTZ and its protocol.

- **DISPLAY MODE**

Select your video type between 'PAL' and 'NTSC'.

- **SECURITY CHECK**

1.Security Check

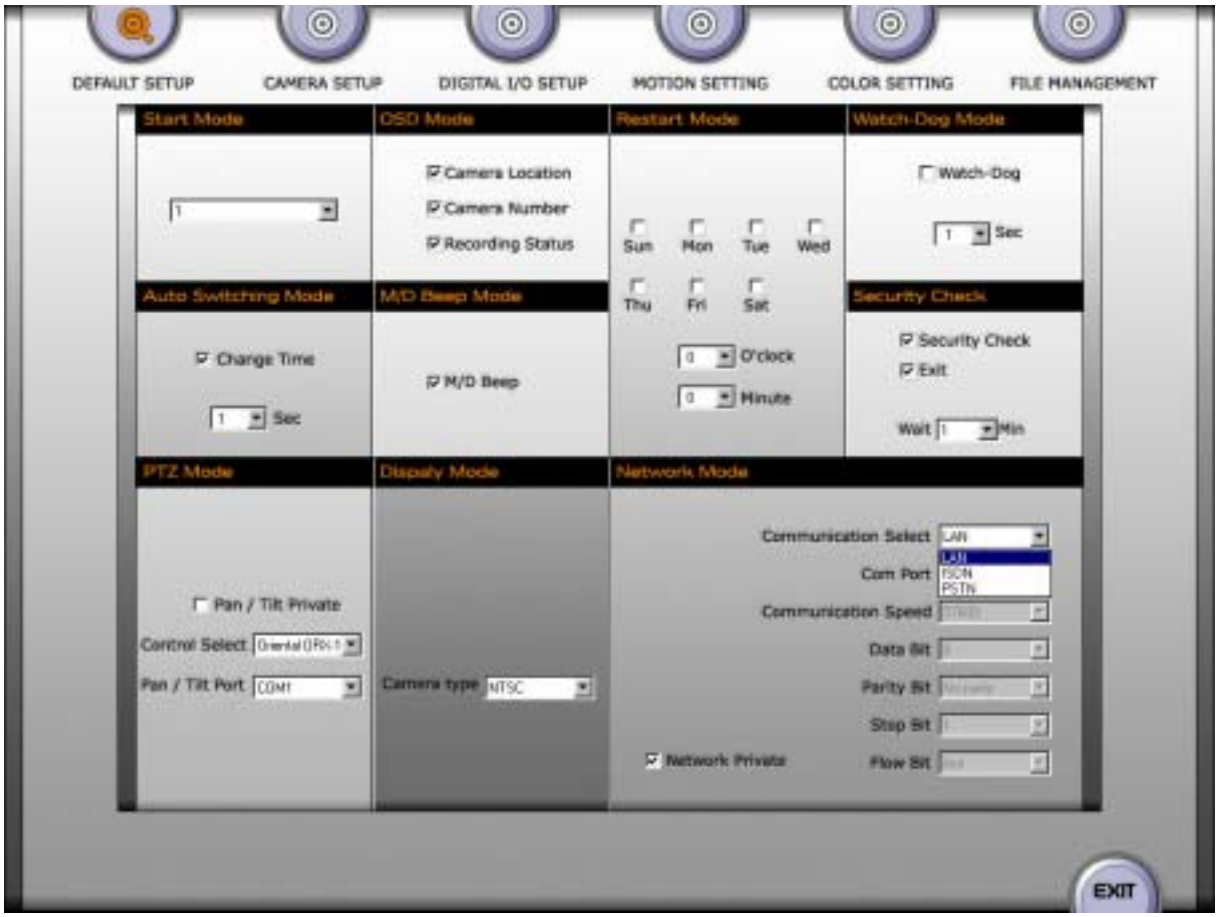
To select Security Check,click ‘Security Check’ and set the time.

If there are no inputs from keyboard and mouse as you set the time,then when you try to input using keyboard or mouse, you will see the screen as below

User name and password are same as you set at ‘LOG IN’

2.Exit

When you click the ‘EXIT’ button on our main program,you will see this screen also above ,if you checked ‘Exit’.

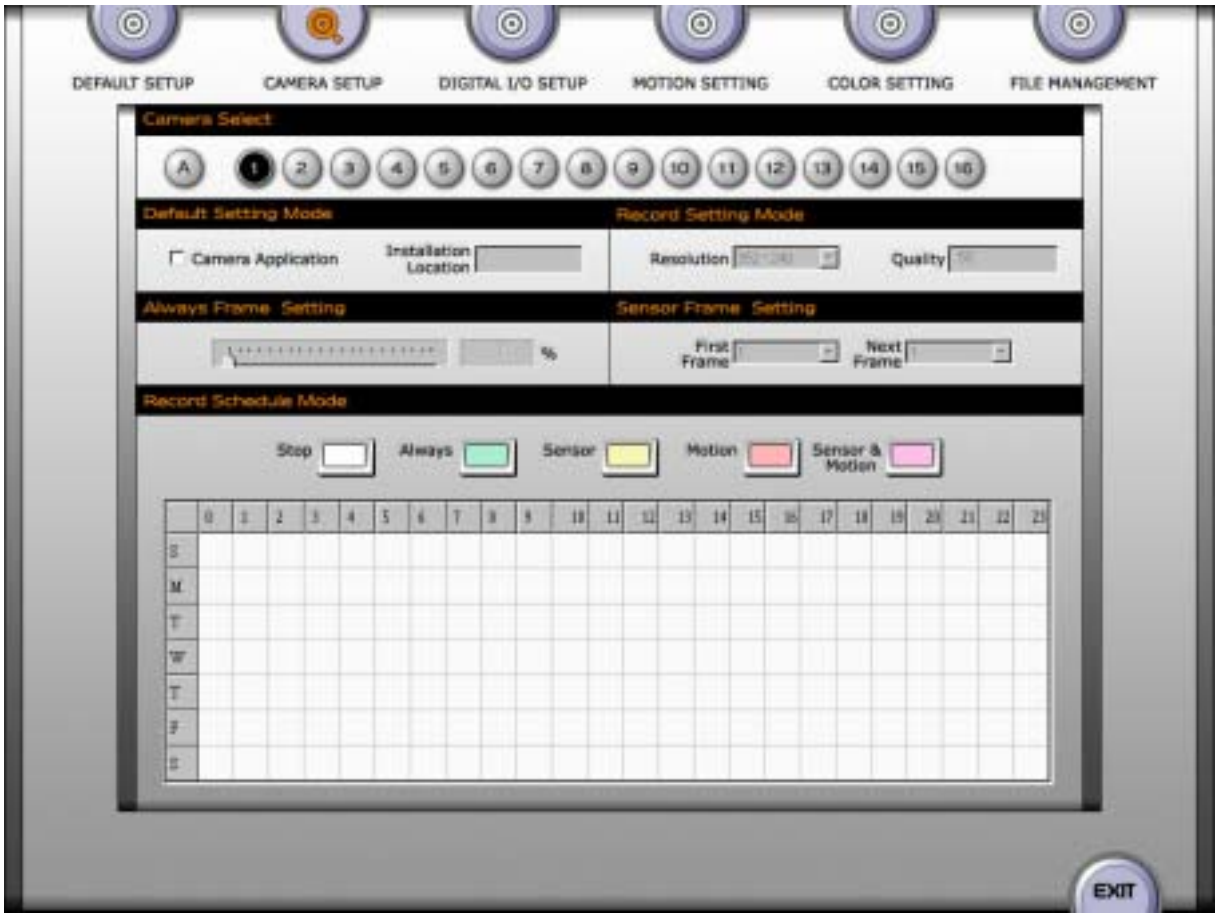


- **NETWORK MODE**

Click 'Network Private' if you wish to allow remote client systems to monitor, search recorded images in the main system and save images in client systems. LAN, ISDN, PSTN are supported. If the "Network Private" box is not checked, no remote client access will be allowed.

If you checked 'Network Private' and "LAN" but you have no Ethernet cards on your system, then it comes up saying that 'Address in the specified family cannot be used with this socket'. It does not shut down your system but just warns you that you have no Ethernet card on it.

If you checked 'Network Private' and "PSTN" but you have no PSTN (Modem) cards on your system, then it comes up saying that 'The comport open error'. It does not shut down your system but just warns you that you have no Ethernet card on it.



9-2. Camera Setup

HICAP50,HICAP100 and HICAP200 can record videos at Max. 60,120 and 240fps respectively. Two,four, and eight cameras are tied up in one (1) video group that can record videos at Max. 30fps in HICAP50,HICAP100 and HICAP200.When you are using one video group 100%, it means that you can record videos at Max. 30fps. For instance, although you have connected only four cameras with a HICAP100 board, you could not record each camera at Max. 30fps if you connected the four cameras only in one group. Then, the total recording frames should be Max. 30.

This table below provides you what cameras are tied up in each video group.

Group	HICAP50	HICAP100	HICAP200
1	Camera 1,3,5,7,9,11,13,15	Camera 1, 5, 9, 13	Camera 1, 9
2	Camera 2,4,6,8,10,12,14,16	Camera 2, 6, 10, 14	Camera 2,10
3	×	Camera 3, 7, 11, 15	Camera 3,11
4	×	Camera 4, 8, 12, 16	Camera 4,12
5	×	×	Camera 5,13
6	×	×	Camera 6,14

7	×	×	Camera 7,15
8	×	×	Camera 8,16

- **CAMERA SELECT**

You can select any camera number by clicking the number. Then, you can individually set options you like per each camera.

If you click 'A', it automatically set 'ALWAYS FRAME SETTING' to 12~13% in Hicap50, 25% in Hicap100, 50% Hicap200 for every camera channel. After you set all options for any camera channel, it will automatically change what you have selected into other camera channels as well except 'ALWAYS FRAME SETTING' when you click 'A'.

If you want to adjust 'ALWAYS FRAME SETTING' per each camera, you should not click 'A' because it will make every camera's frame to the default rate as 12~13% in Hicap50, 25% Hicap100, 50% Hicap200.

- **DEFAULT SETTING**

Click 'Camera Application' if you want to use the selected camera. Then, the other options will be enable to select.

If you clicked 'Camera Position' on OSD Mode in DEFAULT SETUP page, what you name in the box of Installation Location will be displayed while monitoring.

- **RECORDING SETTING**

In our Application program, we support three resolutions such as 352*240, 704*240, and 704*480.

There are some limitations to select video resolutions because of computer PCI bandwidth.

Therefore, we recommend you to select video resolutions as follows;

For HICAP100

- 16 Cameras (352*240)
- 12 Cameras (352*240), 4 Cameras (704*240) or
- 12 Cameras (704*240), 4 Cameras (704*480) or
- 8 Cameras (352*240), 8 Cameras (704*240) or
- 8 Cameras (352*240), 8 Cameras (704*480) or
- 8 Cameras (352*240), 4 Cameras (704*240), 4 Cameras (704*480) or
- 4 Cameras (352*240), 12 Cameras(704*480)
- 4 Cameras (352*240), 8 Cameras(704*240), 4 Cameras (704*480)
- 16 Cameras (704*240) or
- 12 Cameras (704*240), 4 Cameras (704*480)

For HICAP200

- 16 cameras (352*240)
- 12 cameras (352*240), 4 cameras (704*240)
- 12 cameras (352*240), 2 cameras (704*480)

In case of HICAP50,Whatever you can select video resolution but, you may get losing many frames if you record videos at a different video resolution or too many high video resolution mode.

As many as you mix different resolutions, the maximum recording speed you could get is decreasing. So, if you need to record cameras at a different video resolution, it'd better get same resolution cameras in the same video group so that you avoid losing many frames from it.

You can set video Quality as well. If you want a better video quality, you need to increase the value but the file size will also increase.

- Quality

You can select between 20~80,you can think it's opposite meaning is the compression ratio.

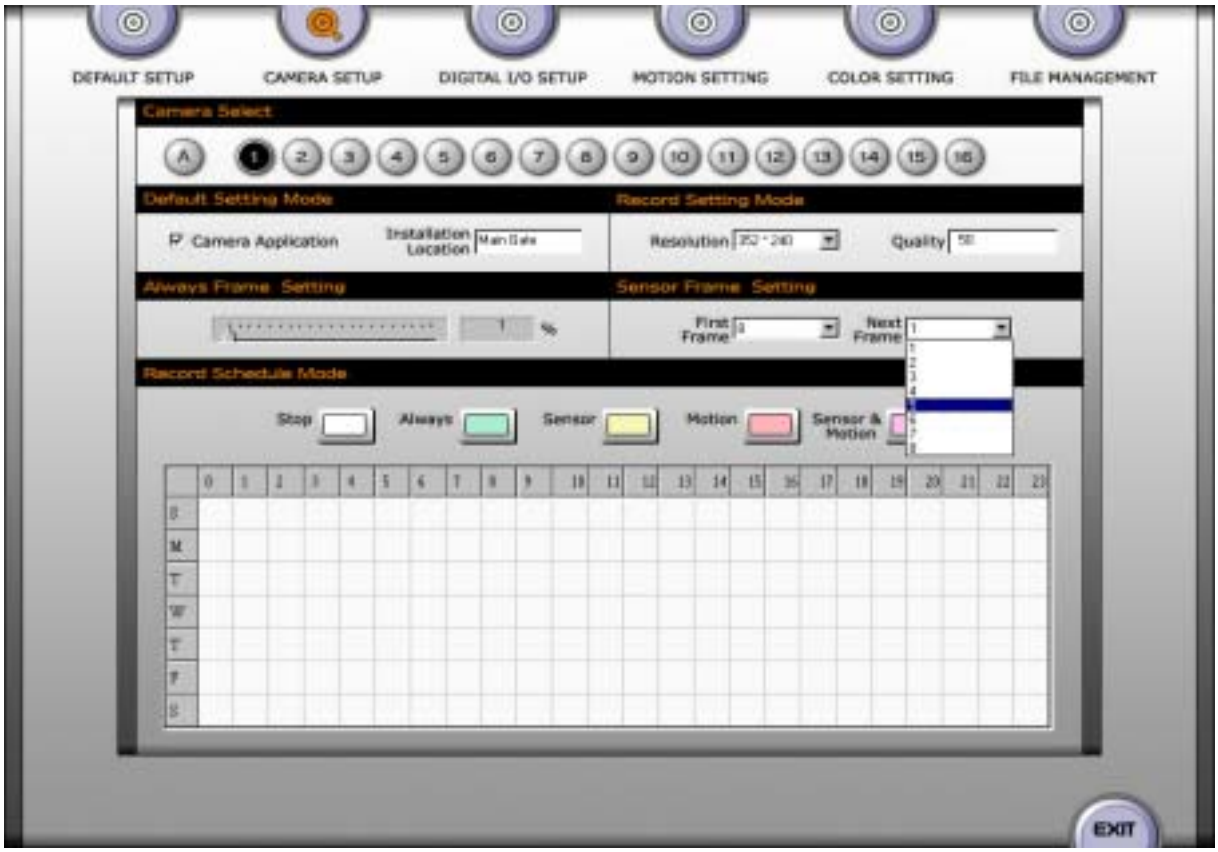
The more select high quality, the more can get clear and vivid images, however it's file size will be bigger.

Note that if you use our application program for wavelet.

We recommend you not to select over 80 because of CPU load.

In our test at PentiumⅣ 1.5GHz ,we have found that there were images not recorded in a couple of channels, when the video quality is over 80.

So, if you are use any other CPUs higher than PentiumⅣ 1.5GHz and they are working fine with our wavelet application program, we would like to share the information with all of you.



- **ALWAYS FRAME SETTING**

In this continuous recording mode, you can adjust the percentage of recorded frames per second between 1 and 100.

As we mentioned, one video group can record videos at Max. 30fps in HICAP series. HICAP50 has two video groups, HICAP100 four video groups and HICAP200 has eight video groups. Also, there are eight(Hicap50), four(Hicap100) and two(Hicap200) cameras in each video group. Therefore, when you set the Always Frame Setting of any camera to 50%, the recording frames of the camera will be Max. 15fps. On the other hand, other cameras in the same video group have only 50% left to share.

If you provide one camera 100%, the other cameras in the same video group has no shares left and you will not be able to even select the other cameras.

Maximum Recording frames per Always Recording Frame's ratio:

100%:	30fps	75%:	22.5fps	50%:	15fps
25%:	7.5fps	10%:	3fps	5% :	1.5fps

(Sample Model:HICAP100)

- **SENSOR FRAME SETTING**

In Sensor recording mode, you can record up to 8 frames before and after the event triggering.

- **RECORD SCHEDULE**

You can set up schedules for recording in this mode. Schedule is divided by days and hours. You can select individual blocks or select all the days and hours by clicking the corner blank **(A)**.

You can select recording modes:

* Stop	Does not record at all. Monitor only.
* Always	Continuously records images
* Sensor	Record images when DI sensor signals
* Motion	Record images when motion is detected
* Sensor & Motion	Record images when DI sensor signals or when motion is detected

9-3. Digital I/O Setup

If you have installed our DIO guide, BNC back panel, or some devices like ours with HICAP series board, you can use sensor input and alarm output functions.

- **DI SELECT**: Select any of 16 Sensor Inputs first.

- **SENSOR MODE**

Must click 'Sensor Application' to use this sensor.

Sensor Name: You can name this selected DI.

Sensor Type: Choose sensor type

- 0 : Low-active(1→0)
- 1 : High-active(0→1)

- **DO SELECT NUMBER**: Click DO numbers you want to connect with the DI

Sensor Position: You can type location of installed the DI sensor selected.

Camera Number: Select cameras that are connected with this selected sensor and it will record images with sensor triggering.

DO setting time: Select how long you want to give signals to DO sensors.

9-4. Motion Setting

- **SELECT CAMERA NUMBER MODE**

On the slide control, there are images for 1 – 16 cameras.

- **SELECT SENSITIVITY MODE**

This determines how much the dot must change to trigger detection. Set as 1, each dot is most sensitive and even a slight change will trigger detection.

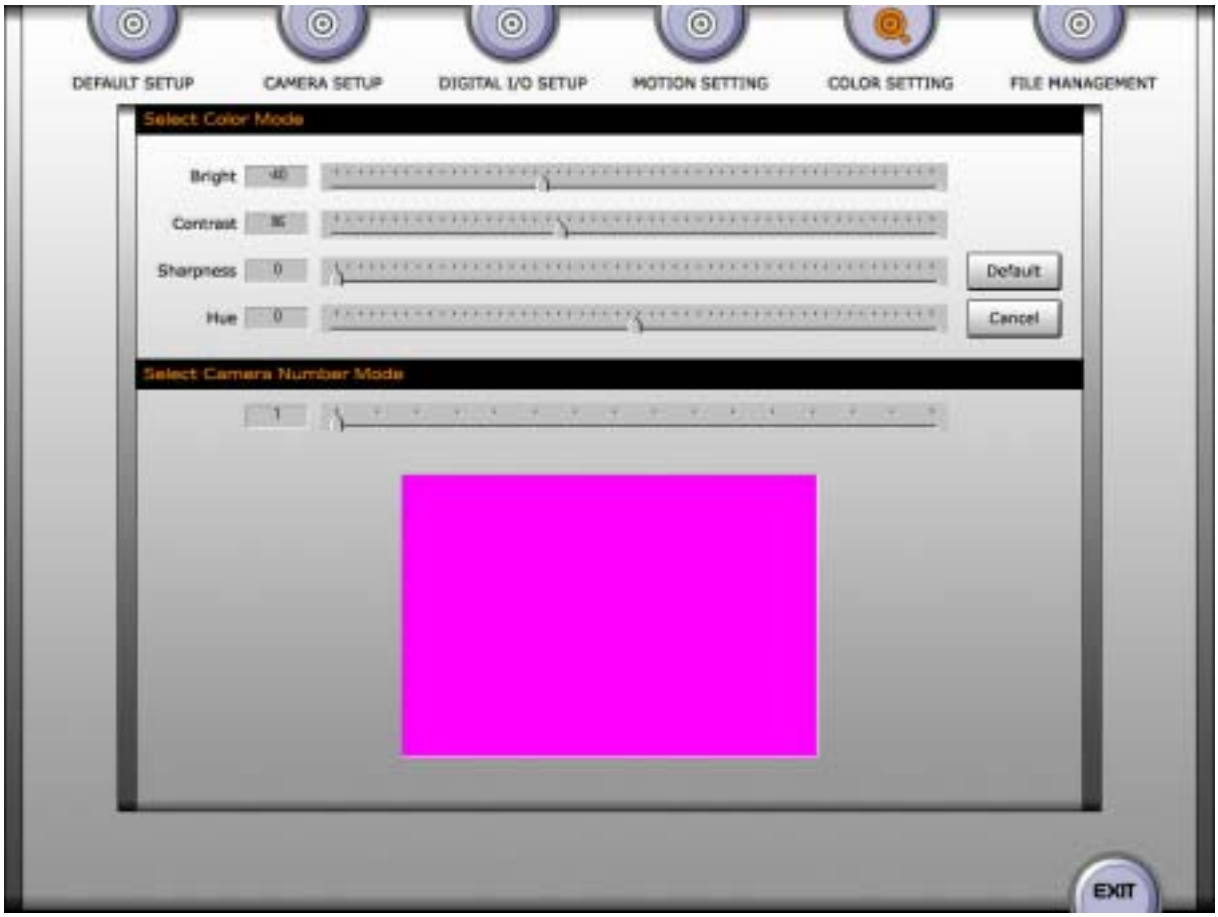
- **DO SELECT NUMBER**

Click DO numbers you want to connect with the MD active of selected camera

Then, select how long you want to give signals to DO sensors.

- **INSERT MD ZONE MODE**

You can select each individual camera one by one and insert motion detection zones (up to 16 zones) by clicking on the “insert area” box and drawing in boxed zones. Then, click “Test”. It will display motion signs as above if there is any motion detected.



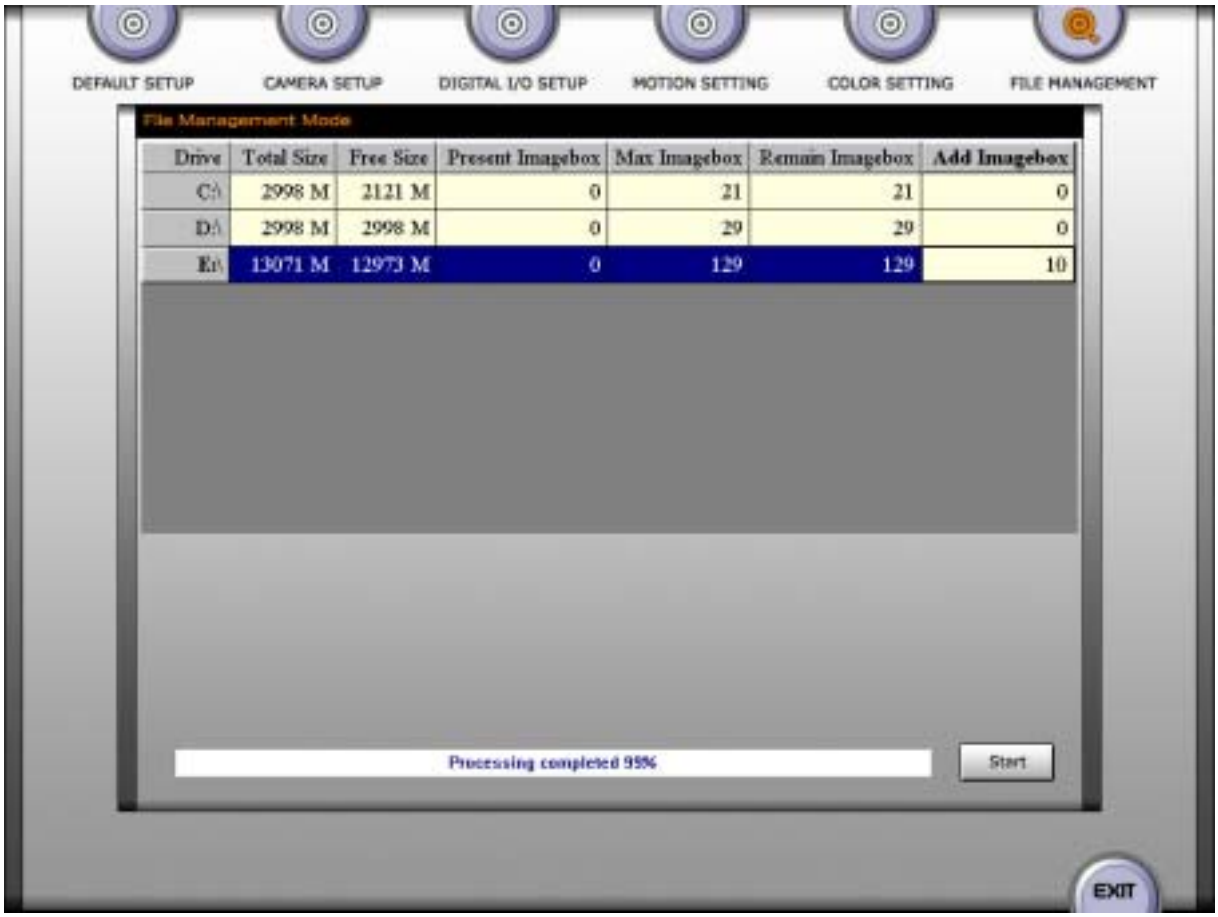
9-5. Color Setting

- **SELECT COLOR MODE**

You can adjust Brightness, Contrast, Sharpness and Hue independently for each camera

- **SELECT CAMERA NUMBER MODE**

On the horizontal slide bar, you can select camera number


DEFAULT SETUP
CAMERA SETUP
DIGITAL I/O SETUP
MOTION SETTING
COLOR SETTING
FILE MANAGEMENT
File Management Mode
Drive | Total Size | Free Size | Present Imagebox | Max Imagebox | Remain Imagebox | Add Imagebox
C:\ | 2998 M | 2121 M | 0 | 21 | 21 | 0
D:\ | 2998 M | 2998 M | 0 | 29 | 29 | 0
E:\ | 13071 M | 12973 M | 0 | 129 | 129 | 10
Processing completed 95%
Start
EXIT

9-6. File Management

The file management function allows you to efficiently use your hard drive space. It displays the size and location of hard drives in use and free space remaining. The size of one image-box is about 100M bytes. You need to setup image-boxes that the application program uses to store images. The application program only saves images in the image-boxes you create. When all the image-boxes are full, the program deletes the one oldest video in the image-box and writes new images.

Therefore, if you want to save old image data longer, you need to add more image-boxes on your hard drive.

Present Image-box: shows you how many image-boxes you have made.

Max Image-box: shows you how many image-boxes you can create.

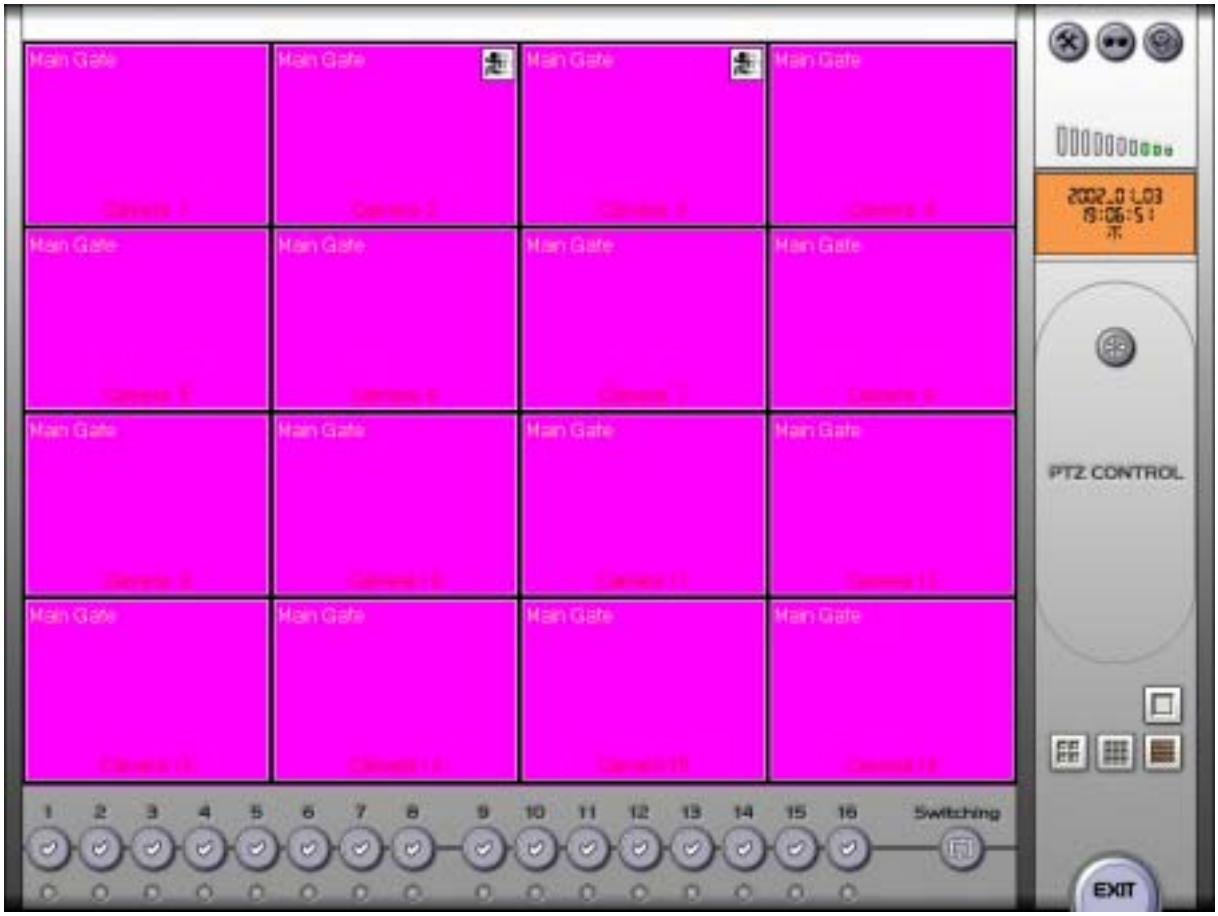
Remain Image-box: shows you how many more image-boxes you have available.

Add Image-box: shows the number of image-boxes.

To add more image-boxes, click the box that is below 'Add Imagebox'. Scroll down and select the number of image-boxes you wish to make.

Then, **you must click 'Start' button.**

10. MAIN PROGRAM MODE



When you are done setting in the setup screen, click 'EXIT' button. The screen will change to the main application program as above.

- **Changing Mode Button**

Click to go to the 'Setup' screen

Click to go to the 'Search' screen

Click to go to the 'Backup' screen

- **Manual Recording Button**

Click this button to begin recording currently monitored video images

- **PTZ Control Button**

To use this function, you must click ‘Pan / Tilt Private’ in the Setup program and select a protocol you like to use. Note that some buttons may not work per protocol model because every protocol does not have all the functions listed on PTZ Control Button below.

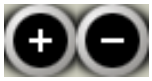
Double click to go to PTZ control mode as you see this right screen.

Pan/Tilt Camera Number: You can select number installed pan/tilt camera device.

Auto Pan: The Pan device will move automatically

Camera light: Enables night lighted flash function for PTZ camera with night flash function.

Near/far: Pan/Tilt focus controls for near/far videos


Zoom In/Out: Zoom In/Out controls

Power and Direction Keys: Controls Pan/Tilt movement

Click to show a single video display

Click to show quad video display

Click to show nine video display

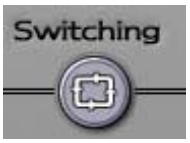
Click to show sixteen video display

- **Screen Display Button**

HICAP Series DVR Boards provide you various monitoring screens as above.

If you double click the display screen, it will change in a full screen mode.

- **Auto Switching Button**



Click this button to switch automatically, it will automatically switch video monitoring type one video,4 videos, 8 videos as you click the screen display button. If you want to stop this function, just click this button.

-.**Imagebox Status**

Indicators show you current status of your imageboxes. Green color boxes are used and currently stored. Blank boxes are empty and available.

Displays day, time and program status

Indicates images being recorded in ‘Always’ mode while monitoring

Indicates images being recorded in ‘Motion’ mode while monitoring

Indicates images being recorded in ‘Sensor’ mode while monitoring

Indicates images being recorded in ‘Manual’ mode while monitoring

This screen will fill the window up if there is no camera signal.

- **Exit Button :** Click to exit. The below screen will follow up.

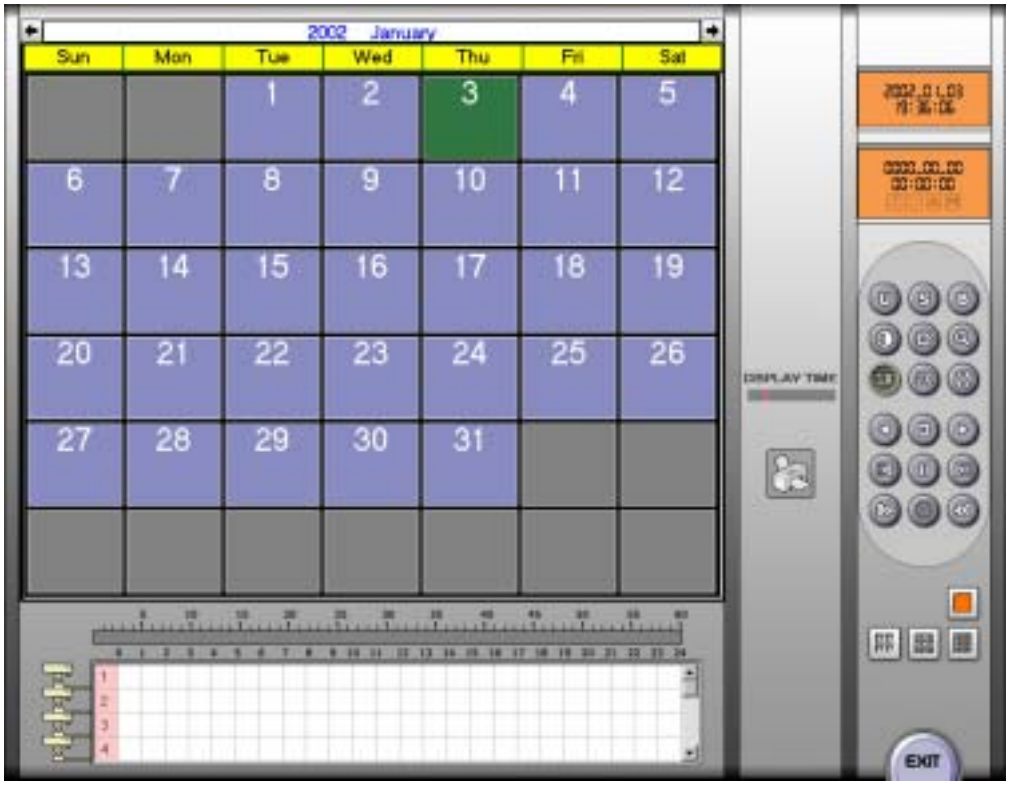
You will see the screen as below, when you click the 'EXIT' button on our main program, if you checked 'Exit'.

User name and password should be in accordance with you set at 'LOG IN'

!) **HICAP Series TV OUT**

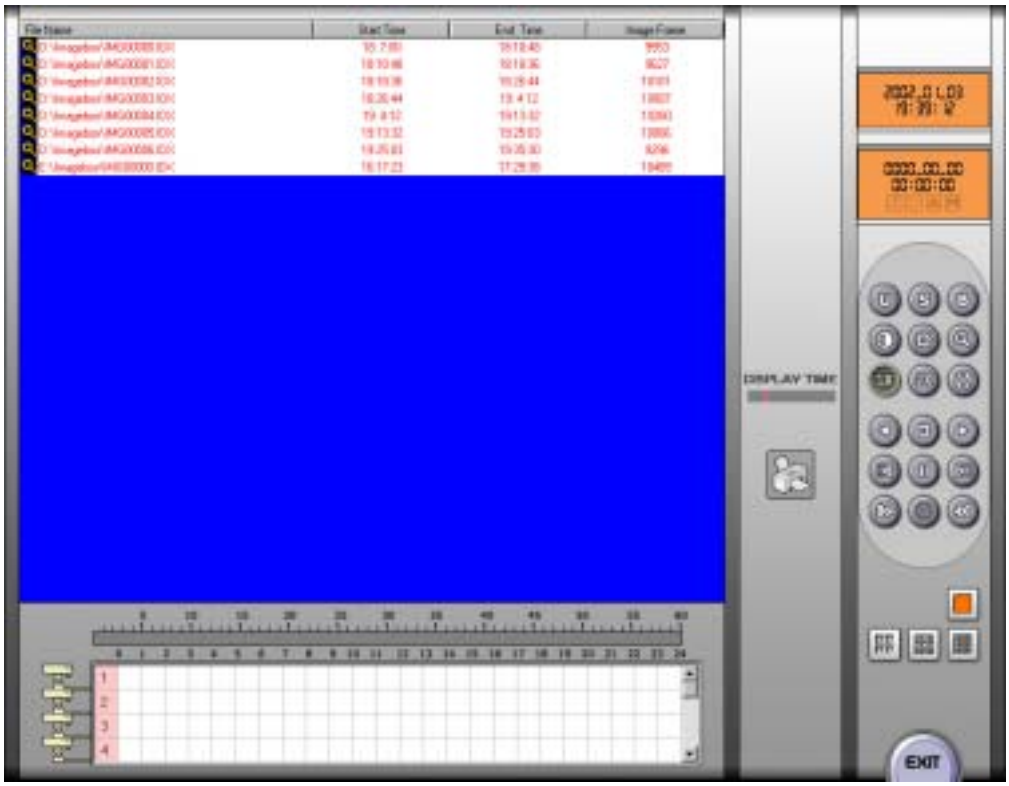
If you want to monitor videos through analog TV or display devices, it should be connected some cable with Composite TV Output port of HICAP series board. Then when you click right mouse button on camera number of main program you wish to monitor, you can monitor one channel selected.

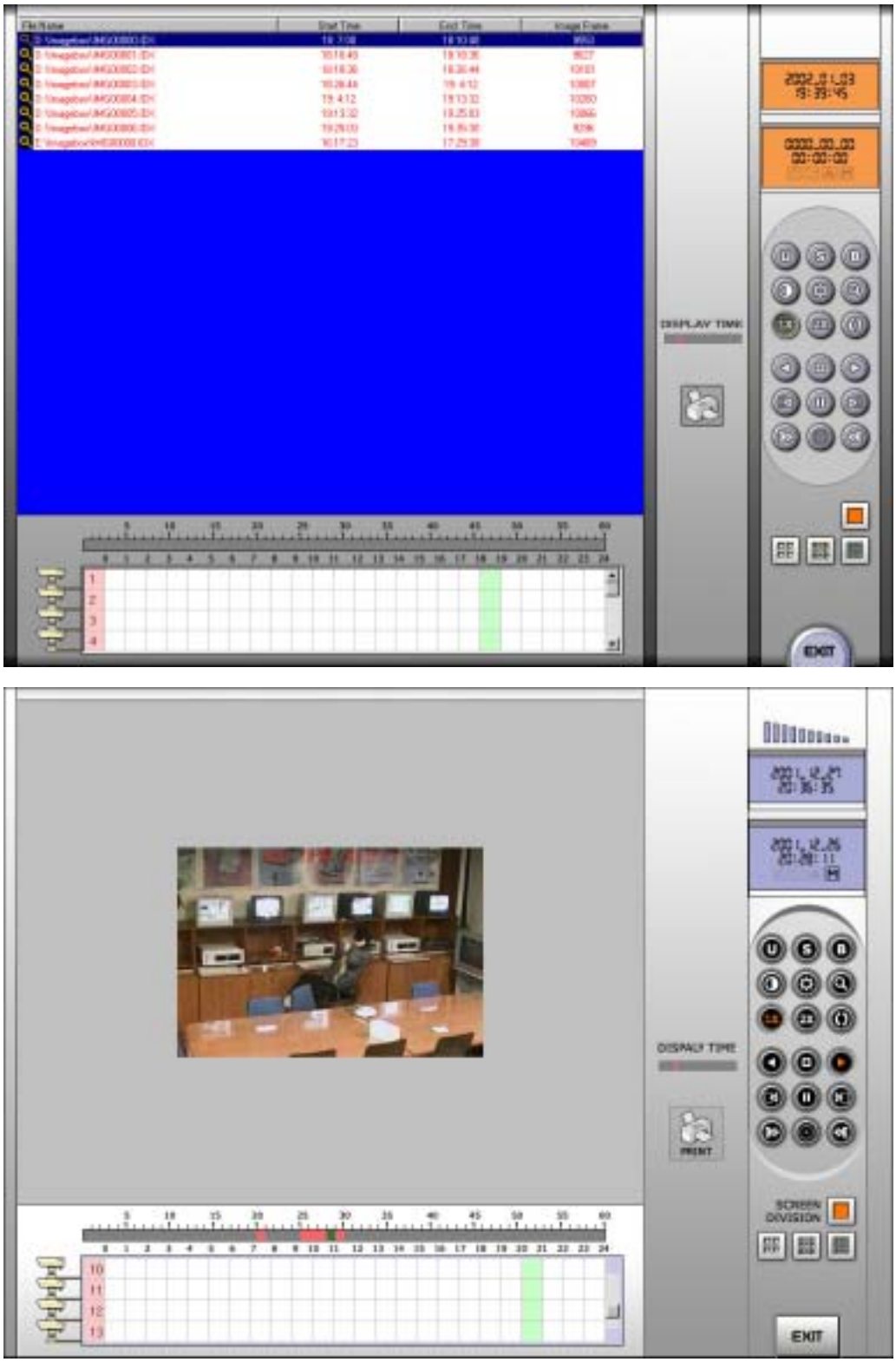
11. SEARCH PROGRAM MODE



You can search recorded images by Date. If image data is saved on your hard drive, it is indicated in the calendar with green color.

Clicking on a date block will bring up images for that date.





The hour blocks for each camera at the bottom will indicate if images were recorded, which camera(s) recorded images and the hour(s) images were recorded. After selecting an hour block of recorded images, you can determine the exact time of the recording in the time scale directly above.

When you want to point any other time you want to see, click 'Pause' and move the pointer to the point you

wish. Then, when you click ‘Pause’ key again, it will display the right time you picked. With a vertical side bar, you can select 16 cameras to playback if they have some recorded images.

When you playback more than one camera channels, you need to set video playback size to 1X first, then select screen division.

When you playback videos, this informs you at which mode they were recorded.

Indicates recorded images were recorded in ‘Motion’ mode

Indicates recorded images were recorded in ‘Sensor’ mode

Indicates recorded images were recorded in ‘Always’ mode

Indicates recorded images were recorded ‘Manually’

Resets recorded image to default

Sharpens recorded video image

Softens recorded video image

Adjust contrast

Adjust Brightness

Enlarge a video image up to four times(200*200)

1 X default display size

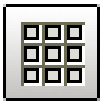
Enlarge display size. Note: works only in single display mode

Go back to previous mode

Saving button. Note: you must pause playback.

One-video display

Four-videos display

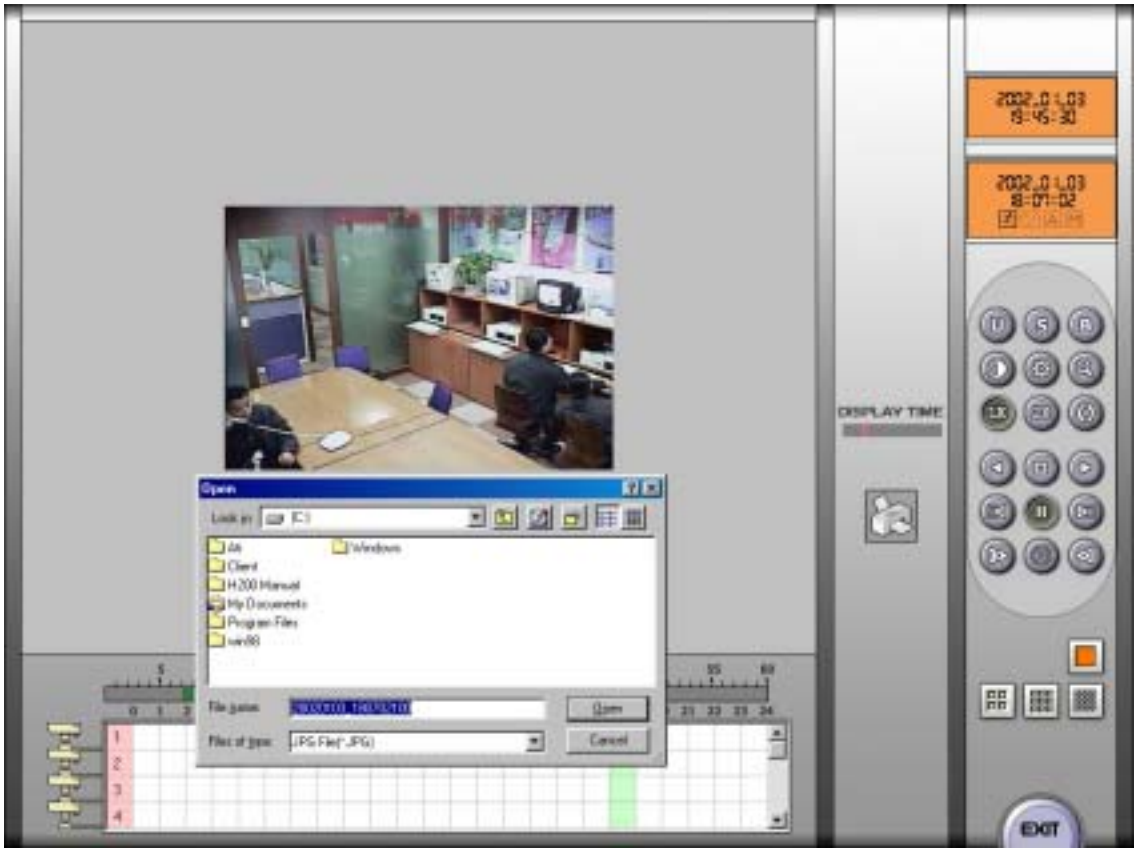

Nine-videos display

Sixteen-videos display

Print the video image, Note: you must pause playback.

To use these functions above, you need to click ‘Pause’ button first.

Exit



When you want to save a still video image in a JPG format to other drives, you need to click ‘Pause’ button first during playback and ‘Saving Button’.

Then, it will show a window as shown above. It creates an automatic file name with the date and the recorded time.

According to the same method, you can print a video.

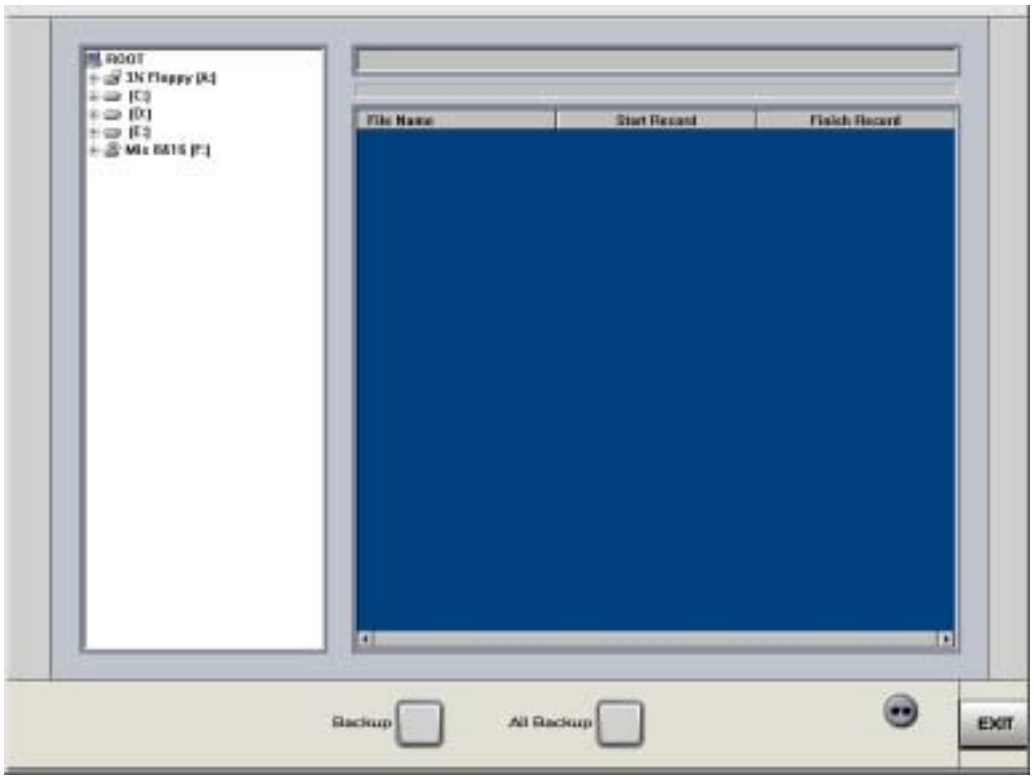
Our Application is designed to keep recording although you are in this search mode. However, when you go to Setup and Backup mode, the main DVR Application is not working.

We are using a special data recording system using Image-box.

In this system, until you fill one image-box up with video data, you are not able to playback the data.

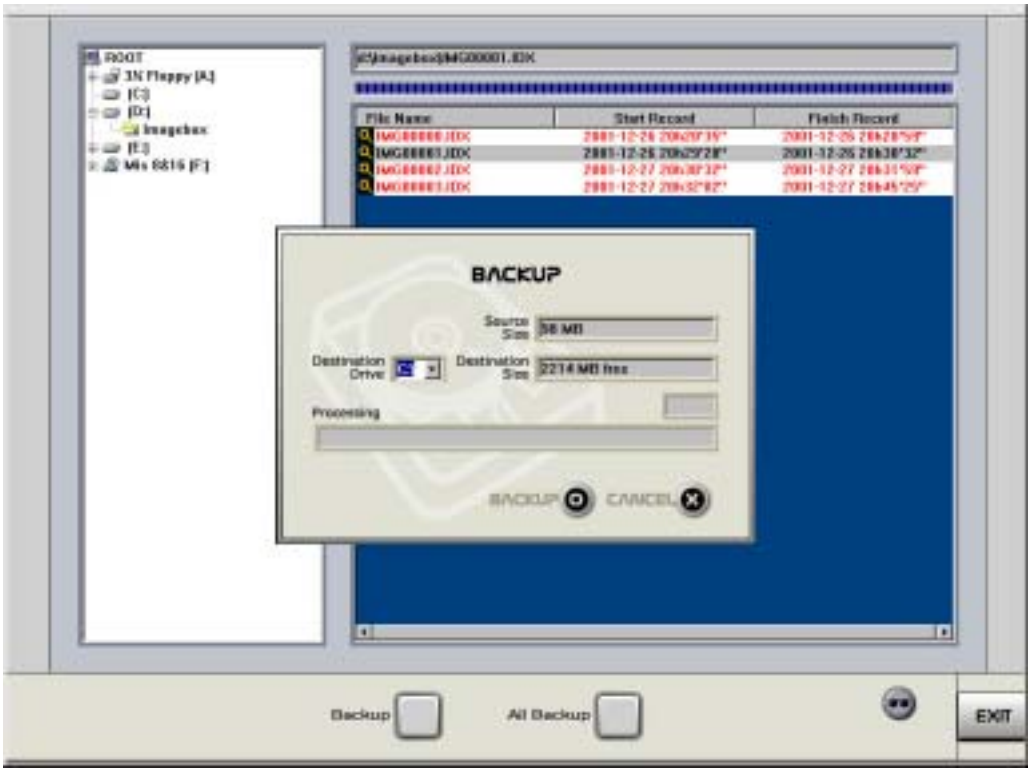
As it were, you just started to record video and want to playback right now. However, if the image-box that is currently using is not filled up, you can playback data in the image-box. Also, you cannot probably view in the image box that has oldest video data and your system is currently deleting them.

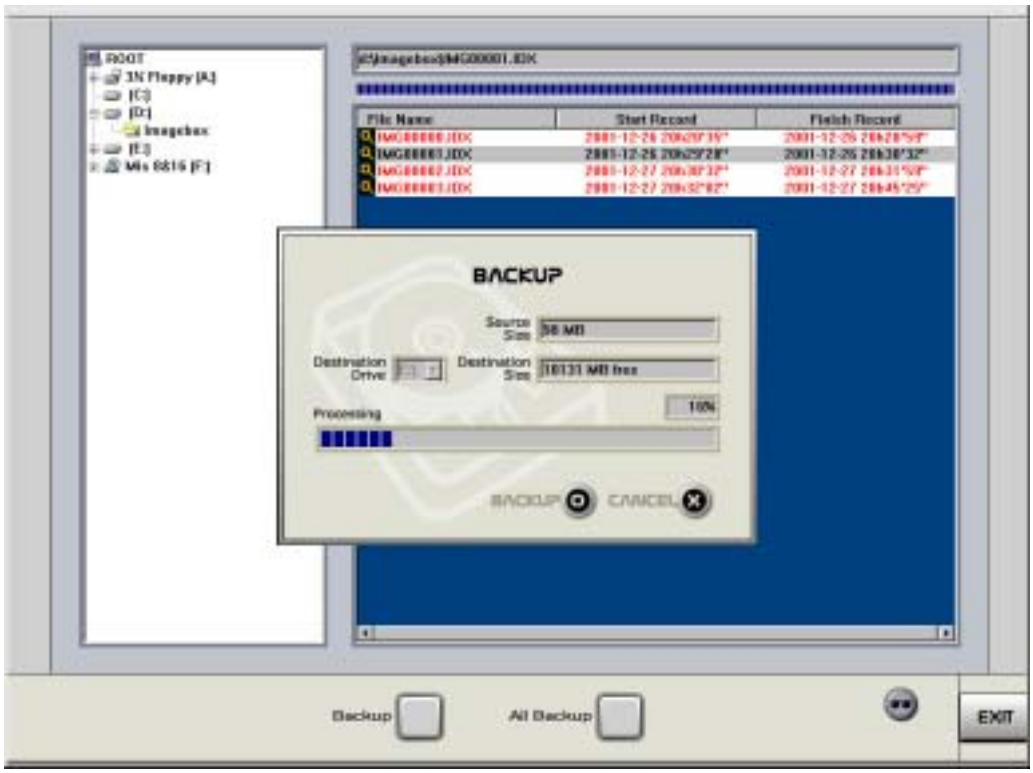
12. BACKUP PROGRAM MODE



To backup data for recorded videos, we only support physical hard drives(No CD-RW supported yet). You can select some image-boxes that you wish to backup or can automatically check all image-boxes you have created and back them up all.

If you do not want to backup all image-boxes, then click drives and browse image-boxes you want to backup first as below. Then, click 'Backup'.

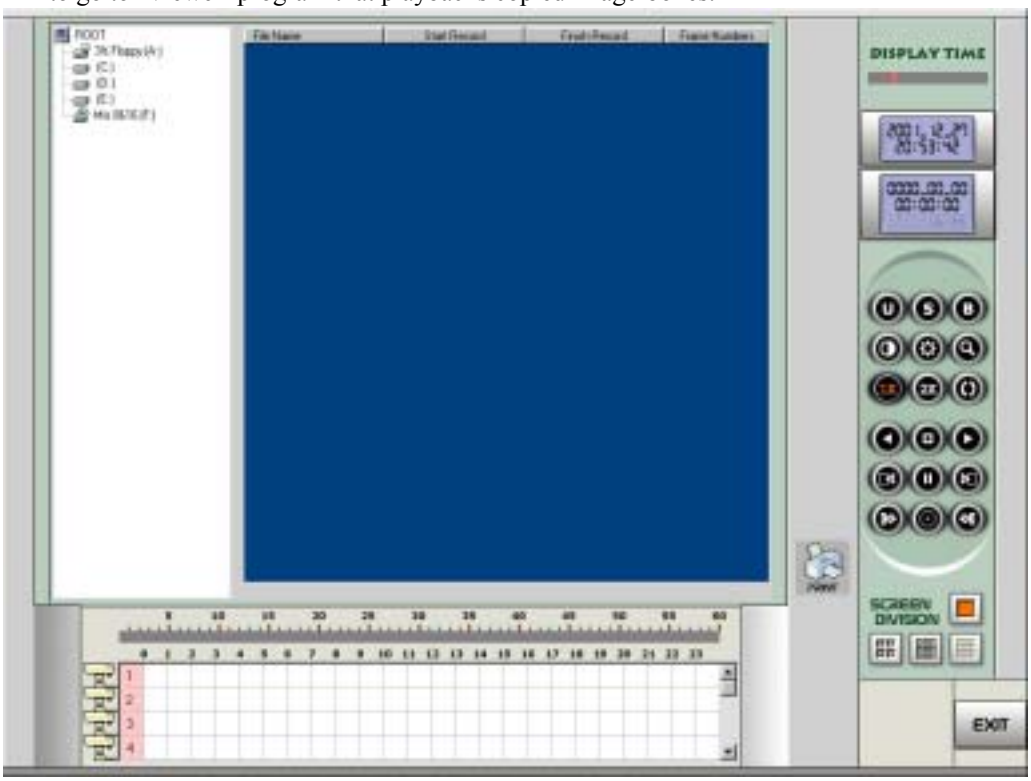




After selecting some image-boxes, select the target drive and click 'Backup'. Then, it will copy selected image-boxes to the destination drive.

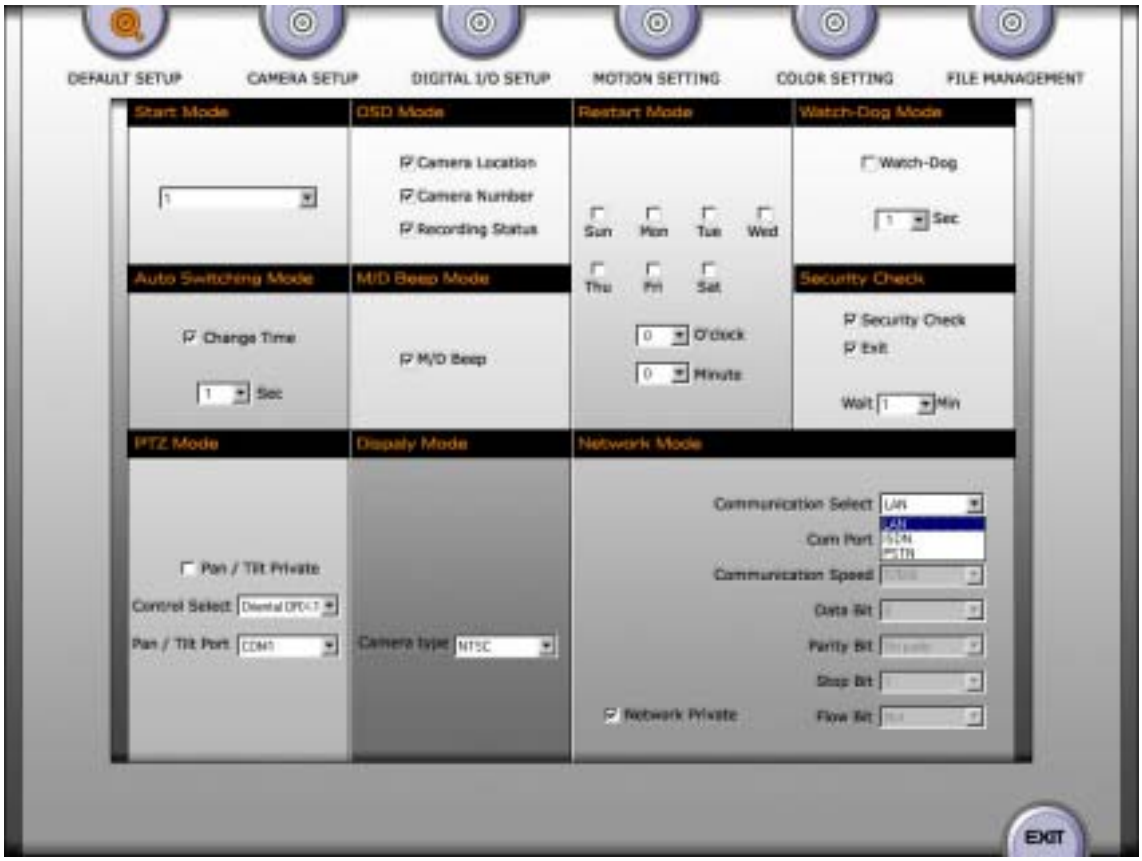
If you just want to backup all video data, simply click 'All Backup' button instead of browsing drives. It will automatically search your drives and let you know the total source size to backup. Then, you follow the same procedure to backup the data.

Click to go to 'Viewer' program that playbacks copied image-boxes.

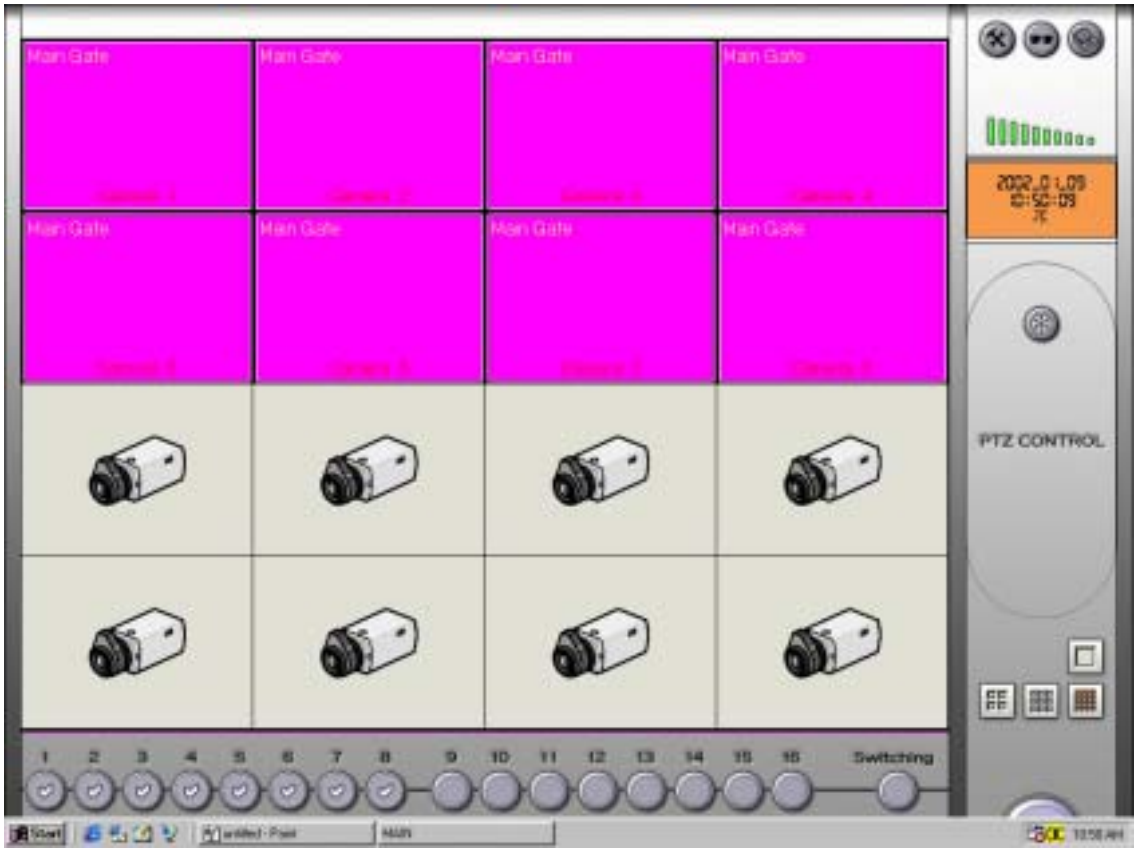


13. REMOTE PROGRAM MODE

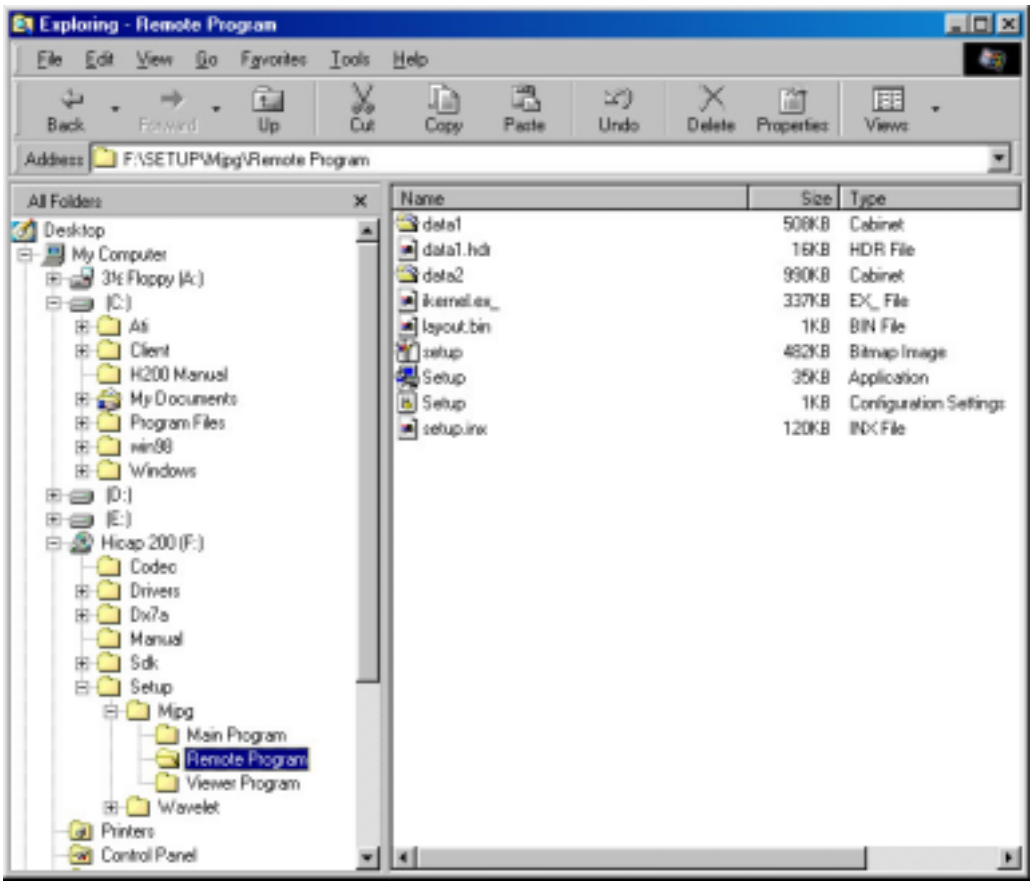
Our remote program includes some functions such as monitoring videos and control PTZ cameras from a remote site(s), saving monitored videos and playback in a remote site(s), and searching recorded videos in the main DVR.



Before you install our Remote program, check if you have click 'Network Private' in the Setup mode of your main DVR system. Then, check there is a 'CIC' sign on the bottom of your main screen when you press a windows key of your keyboard.



If you can see the CIC sign while your main DVR program is running, it means that the main DVR program is ready to send videos in a selected way between LAN, PSTN and ISDN.

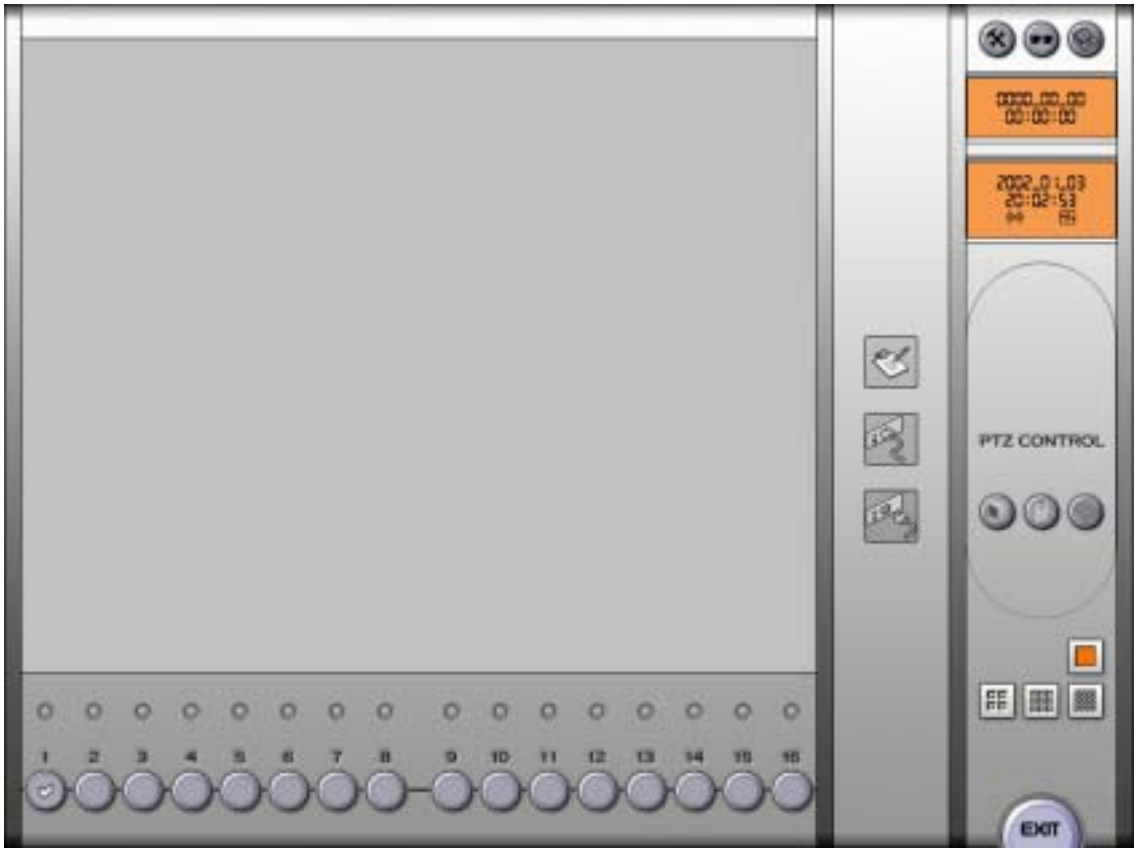


The ‘CIC’ sign should be only one. If there are more than ‘CIC’ sign, it is not going to work properly.

You can simply install our Remote program on your Client system. Click ‘Setup’ file to install.

Make sure that you install a right Remote program in the same software codec between MJPEG and Wavelet. For example, it is not going to work when you install the Remote Program of MJPEG codec although you installed the main Application of Wavelet codec on your DVR system.

After installing, you will find this shortcut icon on your windows screen.



Then, double-click the icon and you will see this window below.

Click to go to 'Setup' mode. Then, you will see this screens below as you select a connection type between LAN, ISDN, and PSTN.

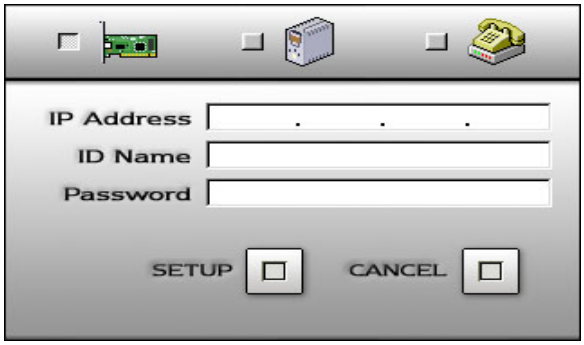
- LAN users,

  [1] Click 'LAN'

  [2] Type IP Address of DVR server. Note: it should be a fixed IP Address.

  [3] You need to type the ID and Password being used in the main DVR.

  [4] Click 'Setup'



- ISDN or PSTN users,

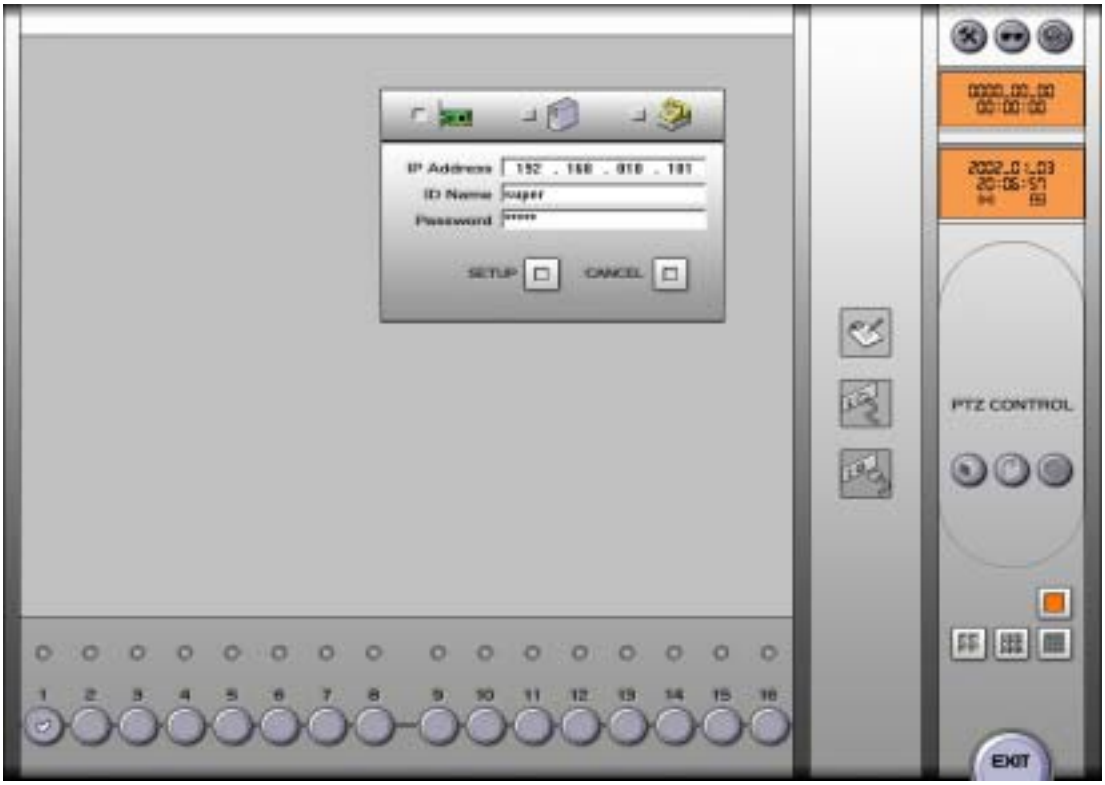
  [1] Click ‘ISDN’ or ‘PSTN’

  [2] Choose modem options of PSTN or ISDN and telephone number

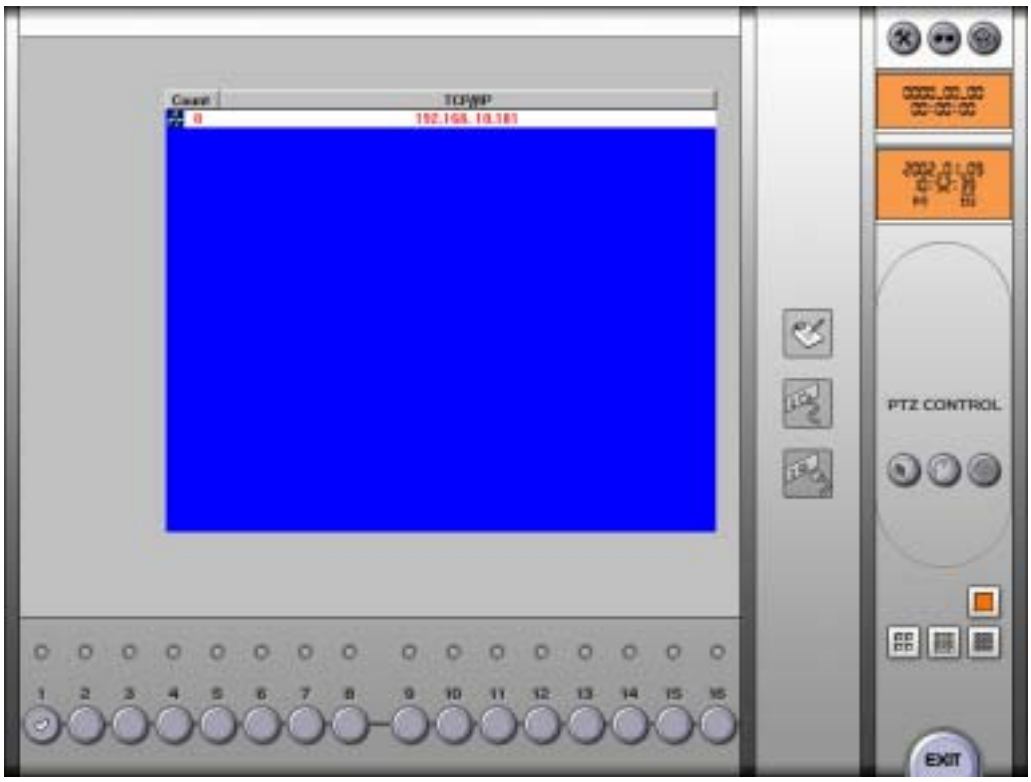
  [3] You need to type the ID and Password being used in the main DVR.

  [4] Click ‘Setup’

!) We do not expect but every country has different ISDN systems and modems.
Although the ISDN connection is working for Hong Kong, it may be not working in your country.

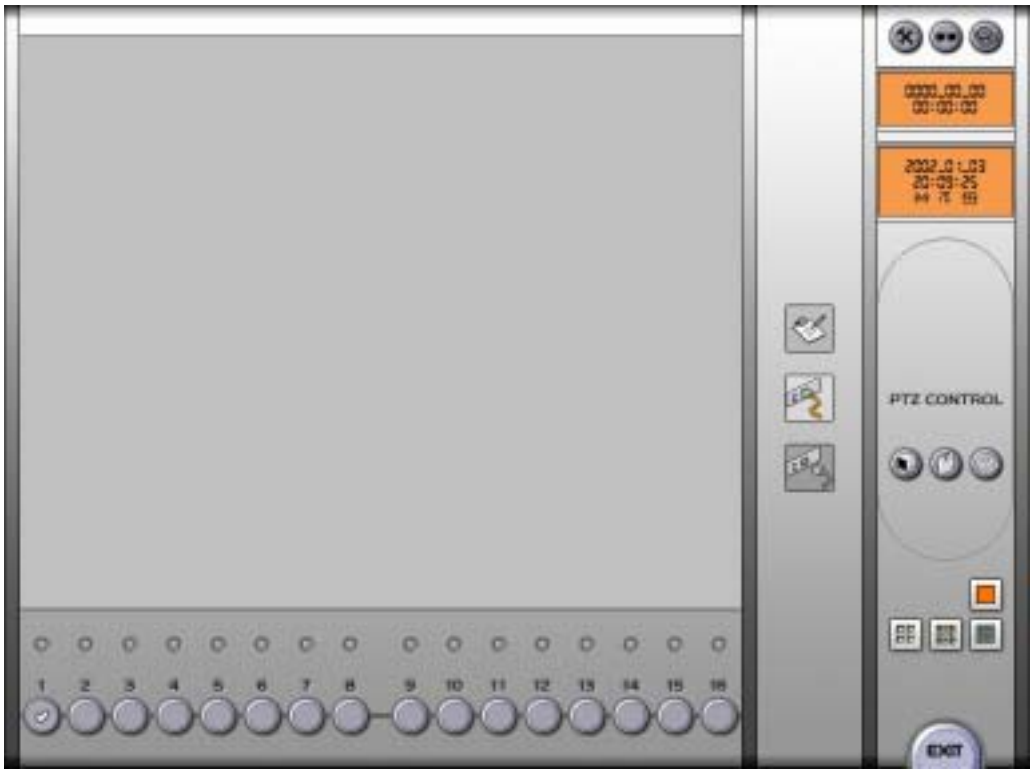


Then, click ‘Report’ and you will see this screen as similar as below.



Double click any IP address you wish to connect and click ‘Connect’ once.

If the connection is okay and successful, you can see ‘connect’ icon in color. If it is not connected, ‘Disconnect’ icon will be in color.



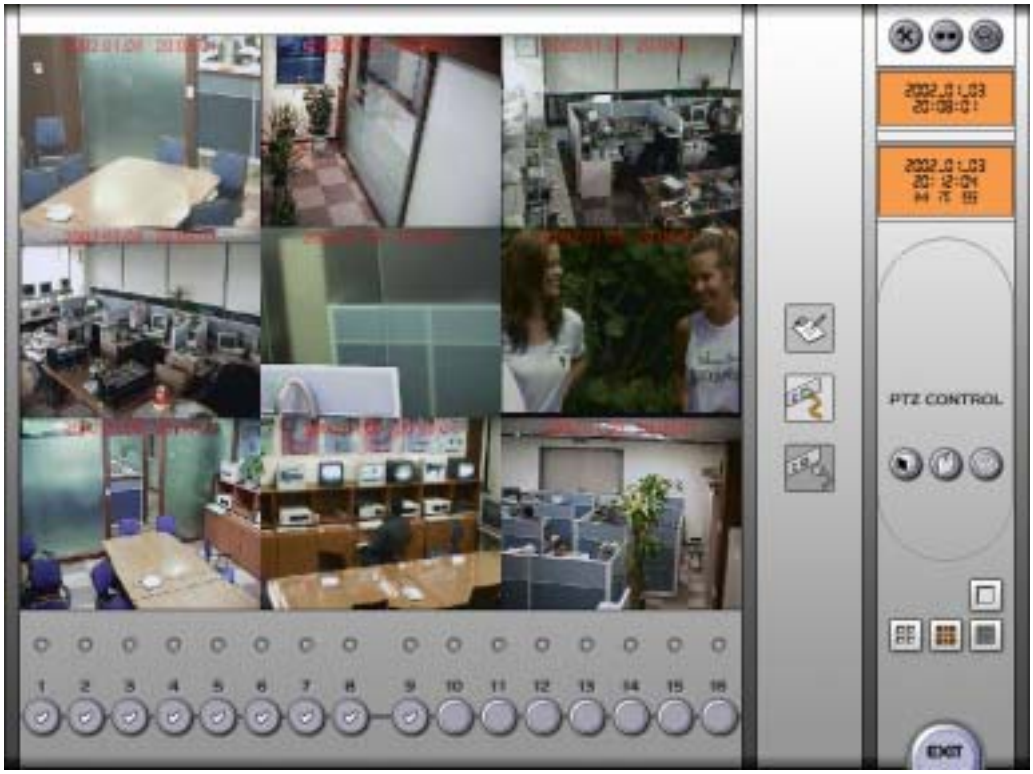
From this status, you need to click what you want to do now.

1. Monitoring videos and control PTZ cameras from a remote site(s)

To use this function, click button. Then, you can monitor videos remotely. You can select a screen division as you wish to monitor.

If you have installed a PTZ camera with your main DVR system, you can also control the PTZ camera remotely.

Click to go to PTZ control mode as you see this right screen.

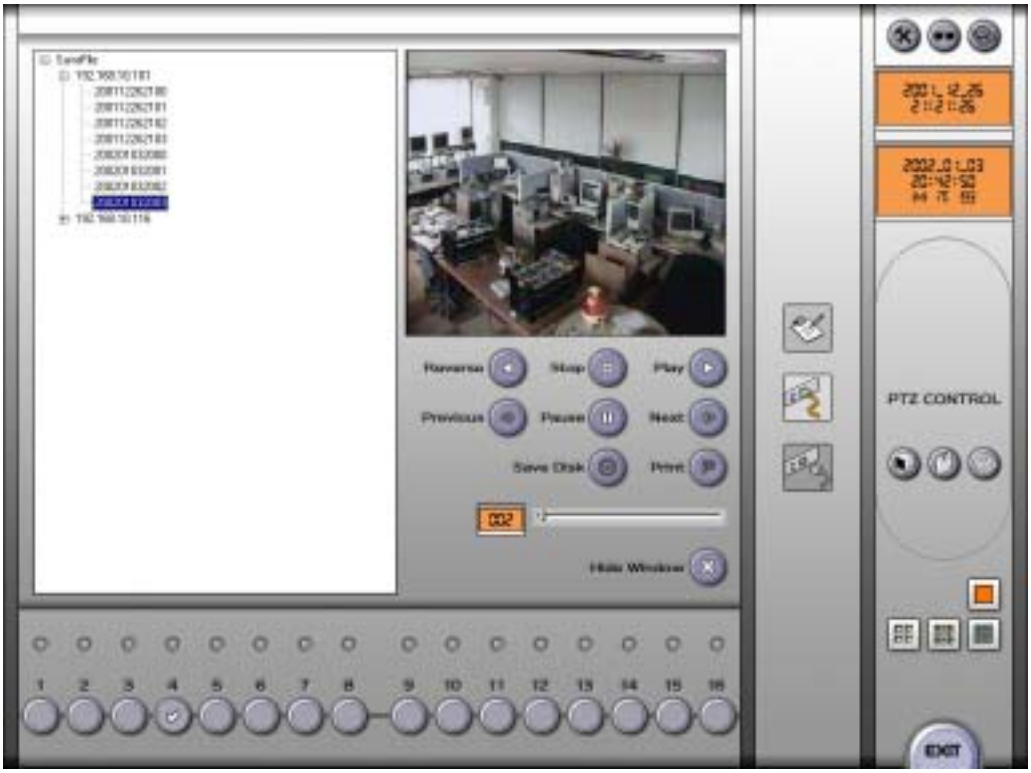


2. Saving monitored videos and playback in a remote site(s)

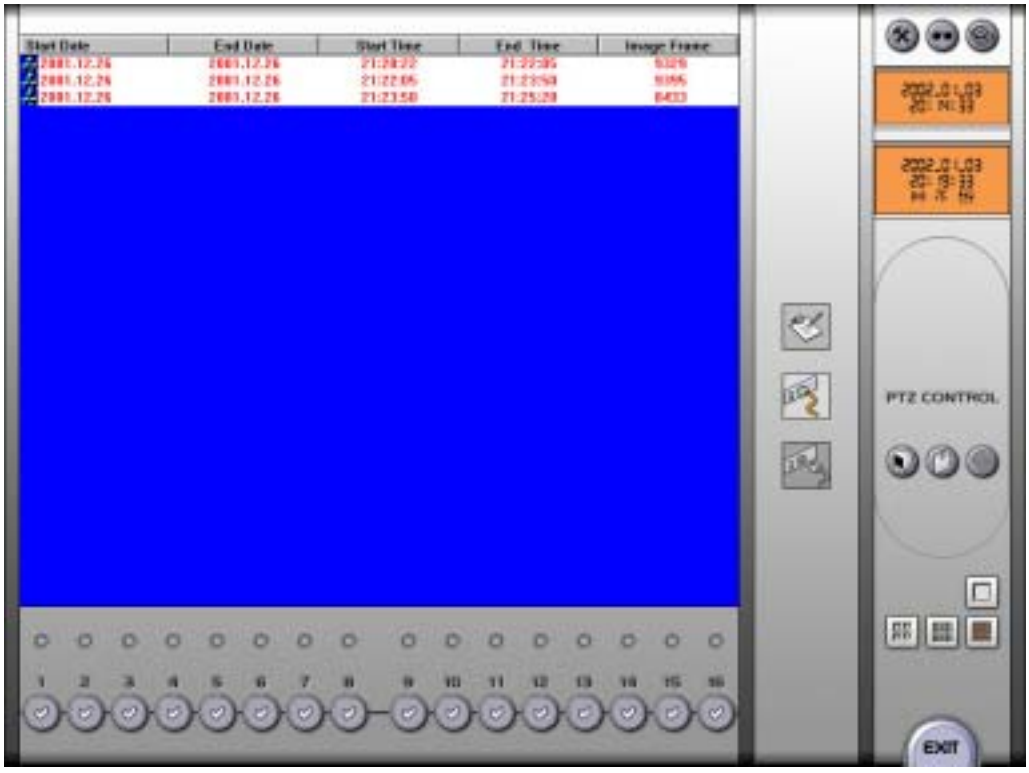
You can save the monitored videos in your client PC as well. Click button during monitoring.

Then, you need to select camera numbers you want to record by clicking this button on each camera number.

To playback this saved data in your client PC, click button next to Setup button.



3. Searching recorded videos in the main DVR



To search image-boxes for recorded video data in the main DVR, click button. Then, it will display the

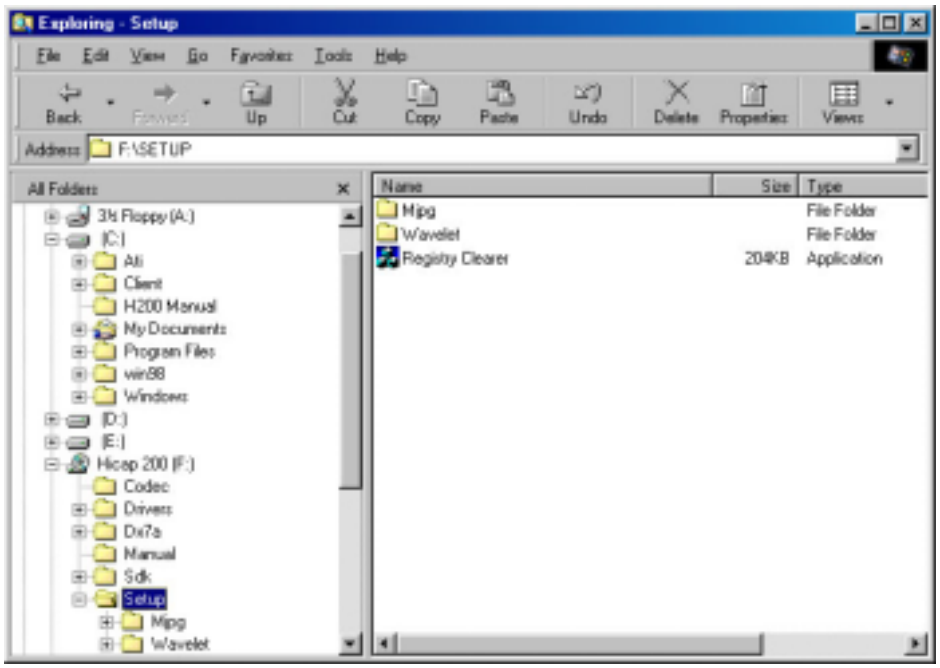
image box information of the main DVR system.

Select an image-box you want to playback.

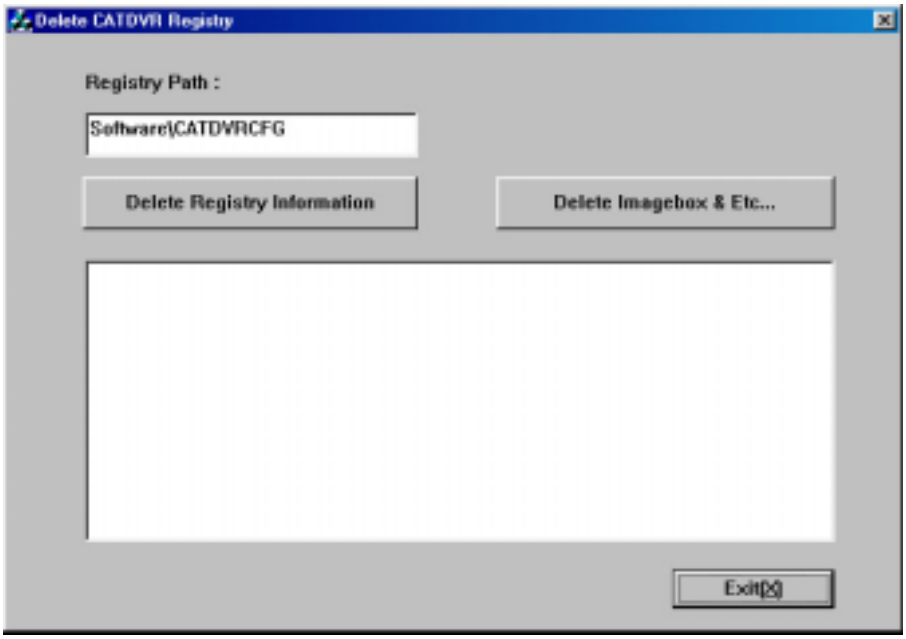
14. UNINSTALLATION & UPDATE NEW SOFTWARE

To uninstall Protectserve Application software, follow directions below.

1. Remove (Uninstall) Protectserve Application software in your windows first.
2. Run ‘Registry Clearer’ in the setup directory of your CD provided.



Then, you will see this window below. You need to click ‘Delete Registry Information’ and ‘Delete Imagebox & Etc…’ once.



Exit the program. Then, you can install any updated Protectserve Application software.